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Pressure Kicks: The Effects of Distracting Variables on the Outcome of a Pressure Kick in Division-I College Football

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PRESSURE KICKS: THE EFFECTS OF DISTRACTING VARIABLES ON THE OUTCOME
OF A PRESSURE KICK IN DIVISION-I COLLEGE FOOTBALL

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
Parks, Recreation, and Tourism Management

by
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Accepted by:
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Dr. Bob Barcelona
Dr. Bob Brookover

ABSTRACT

A field goal kicker in NCAA Division-I college football experiences high amounts of pressure when placed in a game-winning situation. A pressure kick may result in optimal or less than optimal performance due the influence of various distracting factors, such as the evaluative nature of an audience or the pressure of being iced by the opposing team. Pressure kicks are classified as a field goal kick, during the last minute of game time (or during overtime), which will result in a lead or a tie game for the kicking team (Goldschmied, Nankin, & Cafri, 2010). Conflicting literature surrounding social facilitation, home field advantage, pressure, and uncertainty have determined that an elite athlete in a high-pressure game-winning situation will either perform at an optimal or less than optimal level based on their level of mastery in the particular skill. In addition, the effects of various distracting variables may also influence their performance positively or negatively. The purpose of this study is to determine which distracting variables have an effect on the outcome of a pressure kick in Division-I college football. Archival data was collected from ESPN college football scoreboard for NCAA FBS games played during seven consecutive football seasons (2006- 2012). In the seven seasons, 358 pressure kicks occurred, but only 324 cases were applicable due to missing data. The overall team performance and the individual kicker's ability to kick from a field goal distance were found to be the strongest predictors for the success of a pressure kick. Given these two measures, the data set predicted the kicker will successfully make the pressure kick attempt 9 out of 10 times, with or without being iced.

DEDICATION

I dedicate this Thesis to all those who have never stopped believing in me:

To my parents, Chuck and Nina Moede

For always being someone I can look up to and strive to emulate

For your love, patience and gentle spirits and

For providing me with this opportunity

I am forever grateful to you both

To the love of my life, John Burnette

For standing by my side through the joys and frustrations

For your continuous encouragement and patience

that allowed me to keep working until the end

To John Myer, Gail Smith, Anna Cummings & Mrs. Patty

For teaching me the joy of learning from a young age and

inspiring me to always strive to be my best

*I love each and every one of you and thank you for being a part of the
journey that brought me here.*

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TABLE OF CONTENTS

	Page
TITLE PAGE.....	i
ABSTRACT	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS	iv
FIGURES AND TABLES	vii
I. INTRODUCTION	1
II. LITERATURE REVIEW	6
Social Facilitation	6
Audience Effect.....	9
Home Field Advantage	13
Distraction.....	15
Pressure.....	17
Pressure Kick	21
Icing the Kicker	22
Various Distractors.....	23
III. METHODS	28
Data Collection	28
Procedures	30
IV. ARTICLE.....	32
Pressure Kicks: Identifying Predictors of a Successful Pressure Kick and The Role of Icing the Kicker in Division-I College Football.....	33
Abstract	33
Introduction.....	35
Literature Review	37
Methods.....	47

Table of Contents (Continued)

	Page
Results.....	49
Discussion.....	54
Implications.....	58
Future Research.....	60
Conclusion.....	61
References.....	63
V. CONCLUSION.....	66
Limitations.....	69
APPENDICES.....	70
REFERENCES.....	77

FIGURES AND TABLES

	Page
1. Zajonc's Social Facilitation Model.....	6
2. Inbound Line Model.....	24
3. Percentage of Made vs. Missed Field Goal Attempts	50
4. Data for Logistic Regression One:	
Regression Significance.....	51
Predication of Field Goal Outcomes.....	52
5. Data for Logistic Regression Two:	
Regression Significance.....	53
Predication of Field Goal Outcomes.....	54

CHAPTER ONE

INTRODUCTION

American football is a game of strategy that may be influenced by the presence of an audience, which may give the home team a performance advantage. The presence or absence of a spectator(s) is said to have an effect upon the performance outcome of a designated task (Singer, 1965) according to social facilitation theory. Social facilitation began as the idea that the mere presence of another individual would increase an overall performance outcome (Triplet, 1898). The original theory stated that the physical presence of an individual acts as a stimulus, which arouses a competitive instinct leading to an increase in performance outcome (Triplet, 1898). However, Pessin and Husband's (1933) research led to contrasting conclusions when it was determined that an audience may lead to a decrease in the performance of a task, specifically complex or unlearned tasks.

Pessin and Husband's (1933) contrasting conclusions led to further research in audience effects that resulted in the development of a foundation for social facilitation theory. The foundation of social facilitation was developed by Zajonc (1965) and was used to describe the positive or negative change associated with the performance outcome of a task due to the pressure associated with an audience (Zajonc, 1965). Zajonc (1965) combined the research of Triplet (1898) and Pessin and Husband (1933) and concluded that the mere presence of an audience improves performance of a simple or well-learned task and impairs performance of a complex or unlearned task. Therefore, one would expect an

athlete's performance to increase in the presence of an audience given their familiarity with the sport at the National Collegiate Athletic Association (NCAA) level (Epting, Riggs, Knowles & Hanky, 2011).

While social facilitation may be a result of the presence of an audience, the evaluative nature of the audience may be more of an influence on an athlete's success or failure (Cottrell, 1972; Lombardo & Catalano, 1978). In addition, Baron, Moore and Sanders (1978) found that the performance impairment and performance facilitation does not occur unless some form of evaluation or competitive pressure exists. Thus, one would assume that a predominately supportive audience would lead to a higher success rate than a predominately unsupportive audience. In many cases, an athlete is more likely to have a supportive audience when playing on their home field.

A home field advantage is associated with sporting events and claims that a team has a higher success rate, or winning percentage, when they play on their home field. For example, Schwartz and Barsky (1977) conclude that professional football teams win on average 58 percent of their home games. Schlenker, Phillips, Boniecki and Schlenker (1995) found that between 1983 and 1992, 54 percent of Major League Baseball wins occurred on the home field. This information leads one to believe a home field advantage existed in the past and that a home field advantage is still present in sports. However, athletes under pressure can be at a disadvantage when playing at home. It is possible that home field losses are associated with distraction and added pressure to perform in front of the home

audience. Schlenker, Philips, Boniecki and Schlenker (1995) suggest that in championship situations, on a home field, distractions can actually lead to impaired performance.

Distraction produces drive like effects on task performance such as high amounts of anxiety or arousal (Cottrell, Wack, Sekerak & Rittle, 1968; Baron, Moore & Sanders, 1978). Sanders, Baron, and Moore (1978) defined a distraction as any stimulus or response requirement that is irrelevant to the primary task. Distracting conditions are attributed to producing higher levels of arousal (or anxiety) that lead to divided attention (Cottrell, Wack, Sekerak & Rittle, 1968). In a high-pressure situation, such as a professional sporting event, attention is available in a limited quantity (Ninio & Kahneman, 1974).

Divided attention is often a result of a pressure situation that can be experienced by an elite athlete during a professional sporting event. According to Baumeister (1984) pressure is defined as “any factor or combination of factors that increases the importance of performing well on a particular occasion” (p.610). Pressure either results in a performance at an optimal level or less than optimal level based on the level of anxiety a performer experiences. Pressure and high levels of anxiety are said to cause individuals to perform at a low level when the performer’s abilities dictate he or she should have done better (Baumeister & Showers, 1986). For example, an elite athlete experiences high amounts of pressure when placed in a game-winning situation.

Uncertainty is another form of distraction that can have a varying effect on performance outcome through the interruption of a task. An individual may exhibit an increase in arousal when a task is interrupted (Sanders & Baron, 1975). An athlete that is uncertain if a distraction will be present will remain focused on the possibility of a distraction rather than on the performance of the task itself (Sanders & Baron, 1975). The focus on the possibility takes attention away from the task and leads to performance impairment (Sanders, Baron & Moore, 1978). In support of Sanders, Baron and Moore (1978), Guerin (1983) found performance impairment among those who experienced uncertainty during the performance of a complex task.

A pressure kick is arguably one of the most competitive tasks an American football field goal kicker experiences due to the pressure of the game-winning situation. Pressure kicks are classified as a field goal kick, during the last minute of game time (or during overtime), which will result in a lead or a tie game for the kicking team (Goldschmied, Nankin, & Cafri, 2010). In this situation, a field goal kicker is under large amounts of pressure to win the game. The kicker is held responsible for winning the game, losing the game, or tying the game to give the team a chance to win in overtime.

In American college football, icing a kicker is a task interruption tactic that has been developed to influence a pressure kick. "Icing occurs when a kicker, who is about to initiate a movement toward a game-deciding kick, is stopped in his tracks as a time-out is requested by the opposing coach. This act forces the player to wait

an additional period of time before the kick execution” (Goldschmied, Nankin & Cafri, 2010, p.301). An opposing coach uses the tactic of uncertainty or task interruption as a distractor in order to obtain the performers attention. Due to the distracting nature of uncertainty, kickers whom are iced under pressure should miss more field goal attempts than kickers who are not iced under pressure, however many are still successful given the situation.

Therefore, based on the conflicting literature surrounding social facilitation, home field advantage, pressure, and uncertainty an elite athlete in a high-pressure game-winning situation will either perform at an optimal or less than optimal level based on how each distracting variable influences the athlete. Therefore, the purpose of this study is to determine which distracting variables have an effect on the outcome of a pressure kick in Division-I college football. In other words, is there a relationship between predictors cited in the literature and the success or failure of pressure kick? Secondly, based on the relationship between the predictors and the performance outcome, what are the strongest predictors of a successful or failed attempt of a pressure kick?

CHAPTER TWO
LITERATURE REVIEW

Social Facilitation

The presence of an audience may have an influence on the outcome of a task. An increase in performance or a decrease in performance may be observed due to the presence of an audience. Social facilitation theory aims to understand how the presence of another individual or audience changes the performance outcome of a given task.

Performance of a task can result in optimal performance outcomes or less than optimal performance outcomes based on the presence of an audience. Zajonc (1965) developed the foundation for social facilitation, which states an audience should increase performance of a simple or well-learned task and an audience should decrease performance of a complex or un-learned task. An audience acts as a source of anxiety or drive that increases the likelihood of a dominant response (see Figure 1).

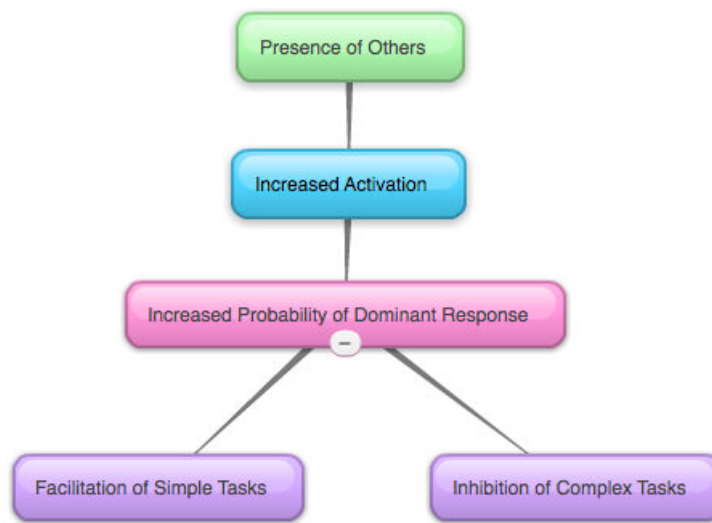


Figure 1: Zajonc's Social Facilitation Model: This model describes the stages an individual goes through and how an individual ultimately performs when they are in the presence of another

The dominant response in a simple or well-learned task is generally the correct response, because an individual has mastered the concept and knows the correct response (Zajonc, 1965). The dominant response in a complex or unlearned task is generally the incorrect response, because an individual has not mastered the task or learned the correct response (Zajonc, 1965).

An individual who has mastered a skill should perform a task at an optimal level in the presence of an audience. Dube and Tatz (1991) tested Zajonc (1965) theory of dominant responses by calculating the number of good shots, bad shots and number of rallies of a tennis player in front of an audience versus alone. They found an increase in performance for the more skilled players in front of an audience and a decrease in performance for the less skilled players in front of an audience (Dube & Tatz, 1991). Similarly, Voyer, Knich and Wright (2006) concluded that in the National Hockey League (NHL) championship series, the presence of an audience increased arousal leading to a decrease in performance of a difficult task. The findings of Dube and Tatz (1991) along with Voyer, Knich and Wright (2006) support Zajonc's (1965) original conclusion that the presence of an audience will increase performance of an easy or well-learned task, but decrease performance of a complex or unlearned task.

The presence of an audience produces drive effects, such as an increase in arousal or anxiety. Anxiety is made up of cognitive and somatic subcomponents (Craft, Magyar, Becker & Feltz, 2003; Hardy & Parfitt, 1991). Cognitive anxiety is the mental component an individual experience during performance, and is classified by

the negative expectation of success (Craft, Magyar, Becker & Feltz, 2003; Vickers & Williams, 2007; Woodman & Hardy, 2003). For example, an athlete who is experiencing cognitive anxiety is worried about performing at an optimal level and fearful of the consequences, such as embarrassment, associated with performing at a less than optimal level (Vickers & Williams, 2007). In contrast, somatic anxiety is classified by the physiological and affective elements associated with anxiety, such as increased heart rate or tension (Craft, Magyar, Becker & Feltz, 2003; Vickers & Williams, 2007; Woodman & Hardy, 2003).

Cognitive and somatic anxiety levels are associated with the performance outcome of a task according to the inverted-U hypothesis. The inverted-U relationship is characterized by somatic anxiety when optimal performance is required (Craft, Magyar, Becker & Feltz, 2003; Woodman & Hardy, 2003). Optimal performance is achieved at an intermediate level of arousal (Hardy & Parfitt, 1991). According to the inverted-U hypothesis, “performance is predicted to be poor at very low levels of arousal, good at moderate levels of arousal and then progressively worse as arousal increases beyond this optimal level” (Craft, Magyar, Becker & Feltz, 2003; Hardy & Parfitt, 1991, p.163). Increased arousal above the individual’s threshold leads to inferior performance (Martens & Landers, 1970; Vickers & Williams, 2007). In support of the previous statement, Filho, Moraes and Tenenbaum (2008) found that high levels of arousal are attributed to low performance (or non-optimal performance).

Anxiety or arousal levels are often associated with pressure and can change the mental state of an athlete during performance of a task. Psychological, biological and sociological factors influence the mental state of an individual leading to optimal or non-optimal performance of a task (Filho, Moraes & Tenenbaum, 2008). In addition to the influence of psychological, biological and sociological factors, an individual's mental state is affected by emotion. Emotions are attributed to the pressure stimulus and may result in factors such as, changes in heart rate, blood pressure and automatic nervous system reactions (Robazza, Pellizzari, Bertollo, & Hanin, 2008). These factors can be linked to optimal and non-optimal performance. Robazza, Pellizzari, Bertollo, and Hanin (2008) suggest the outcome of a performance is due to the interaction between task demands and intensity of emotion.

Audience Effect

A predominantly supportive or predominantly unsupportive audience should have varying effects on performance outcome. The effect is due to the evaluative nature of each type of audience. Landers and McCullagh (1976) determined that differences exist within each audience due to the nature of effects associated with the audience, such as a supportive versus an unsupportive audience. Thus, one would assume a supportive audience would lead to improved performance and an unsupportive audience would lead to impairment of performance, as often there is positive reinforcement coming from a supportive audience and negative reinforcement coming from an unsupportive audience.

A supportive audience may lead to optimal performance or an increase in performance due to the decrease in the pressure to perform well. A supportive audience allows individuals to cope with anxiety levels and perform at an optimal level (Butler and Baumeister, 1998). For example, an elite athlete may not worry about impressing a home crowd as the crowd may continue to support the athlete in failure, however an athlete may feel pressure to impress an unsupportive crowd in order to prove their ability to perform at an optimal level (Butler & Baumeister, 1998).

Conversely, supportive audiences may expect more than an unsupportive audience, which may lead to performance impairment. According to Wallace, Baumeister and Vohs (2005) “performers with supportive audiences simply have more to lose than other performers with unsupportive audiences” (p.433). The presence of an audience places a higher value on the performance of a task because of the reward or consequence an individual may receive from the audience (Seta & Seta, 1995). For example, an athlete that performs at an optimal level receives praise, but an athlete that performs at a less than optimal level receives negative outcomes, such as embarrassment (Seta & Seta, 1995).

The evaluative nature of an audience and the level of anxiety individual athletes experience have an influence on performance facilitation or performance impairment. Drive effects, such as increase in arousal or anxiety, occur when the audience is evaluating the performance of an individual (Cottrell, 1972). An individual anticipates the positive or negative performance outcomes that an

audience expects (Cottrell, 1972). During the performance of a task, an audience becomes a distraction when an individual develops the desire to seek out the audience cues on his progress (Baron, Moore & Sanders, 1978). "Social facilitation effects will occur only when persons fear that a potential failure in the presence of an audience will have negative consequences" (Strauss, 2002, p. 240). In support, Uziel (2007) determined impaired performance might be due to extreme levels of apprehension caused by the fear or public humiliation during performance of a simple task.

In addition to the evaluative nature of the audience, the cues an audience provides might increase or decrease performance through challenge and threat patterns (Blascovich, Mendes, Hunter & Salomon, 1999). Threat results in a decrease in performance because an individual does not have the skill to perform at an optimal level (Blascovich, Mendes, Hunter and Salomon, 1999). An individual that is uncertain or feels threatened tends to perform at a lower level due to fear of failure (Uziel, 2007). In the event an audience expects optimal performance, as in the case of a supportive audience, the increase in arousal may lead to a decrease in performance. Strauss (2002) determined that an expert's performance decreased due to the presence of an audience. An elite athlete is often associated with a high ability level and an expectation to perform the task efficiently. It is then plausible that an athlete is affected by the evaluative nature of an audience due to the association of the athlete's ability with the simplicity of the task.

In many sport environments, an audience provides supportive cues, such as cheering or unsupportive cues, such as booing. Epting, Riggs, Knowles and Hanky (2011) researched the effects of audience behavior on different athletes. They found the presence of an unsupportive audience lead to a pitcher throwing fewer strikes (Epting, Riggs, Knowles & Hanky, 2011). Their conclusion would lead one to believe that cheering for a team does not affect the performance of a task, but a negative reaction from the audience would impair performance.

Individuals taking cues from an audience may become concerned with their performance of a task and develop unrealistic expectations. Performance impairment may result from unrealistic expectations. Baumeister (1984) suggests that performance impairment occurs when public expectations are unrealistically high and participants doubt they can fulfill expectations. Thus, participants become self-conscious about a publicly evaluated performance. An elite athlete then has become focused on external expectations, in other words an individual's focus is not on the task, but on the pressure employed by an external factor. In the case an individual knew the audience expected a successful performance, the performance outcomes were lower (Baumeister, Hamilton & Tice, 1985). An individual that perceives the audience as expecting success may perform at a lower level, because the individual believes he cannot meet the audience's expectation (Baumeister, Hamilton & Tice, 1985).

Home Field Advantage

Supportive audiences produce various effects on performance. An athlete playing on his home field is generally in the presence of a supportive audience, giving the team a home field advantage. The home field advantage is defined as a team's winning percentage for home games being higher than the team's winning percentage for away games, regardless if the teams overall record is a winning or losing record (Salminen, 1993). Courneya and Carron (1992) defined the home advantage as a team winning more than 50 percent of the home games, when the team plays the same number of home and away games. A home field advantage is connected to the general belief that a predominantly supportive audience will produce social facilitation and increase performance efficiency within an individual athlete or athletic team.

The home field advantage can be attributed to various factors. The social support of the audience is often the most identifiable reason for a home field advantage. Mizruchi (1985) stated the most difficult environment for an opposing team is when the home team has a strong tradition, local individuals who identify with the team and a stadium located in the center of town. The home field advantage has also been explained through familiar conditions, referee bias, and travel fatigue of the visitors (Courneya & Carron, 1991; Courneya & Carron, 1992; Salminen, 1993).

A home field advantage has been found for many collegiate and professional level sports due to the winning percentage at home exceeding the expected 50

percent (Bray & Widmeyer, 2000). A home field advantage of 55 percent was found in the National Football League (NFL) and 53 percent in Major League Baseball (MLB) (Pollard, 1986). A home field advantage of 70 percent was found at the NCAA basketball level (Silva & Andrew, 1987) along with a 62 percent home field advantage in NCAA baseball (Courneya, 1990). The prior research would suggest a home field advantage in professional and collegiate athletics does in fact exist and is worth considering.

While a home field advantage has been found across previous sports within the literature, conflicting research has found a home field disadvantage in sports and a non-existent advantage in sports. Goldschmied, Nankin, and Cafri (2010) observed performance in the NFL and found a non-existent home field advantage. Cao, Price and Stone (2011) observed performance decrement in the National Basketball Association (NBA) and concluded that a home field advantage and playoff situations do not cause a statistically significant change in performance outcome. In other words, it appears that during the regular season, playing on the home field does not influence performance and the pressure of a playoff situation does not influence performance.

However, supportive audiences create an internal distraction leading to impaired performance (Wallace, Baumeister & Vohs, 2005). This finding would suggest a home field disadvantage for an individual athlete or team, as a predominantly supportive audience should impair performance outcome. Therefore, in a high-pressure situation, such as in a championship game, the home

field advantage becomes a home field disadvantage. Schlenker, Philips, Boniecki and Schlenker (1995) suggest that in championship situations, on a home field, distractions can lead to choking. Voyer, Knich and Wright (2006) found the home team winning percentage to be larger in non-critical games than in critical games. A home team may preform at a less than optimal level in a pressure situation because they fall behind a crucial point in the game, become self-conscious and are distracted from the task (Schlenker, Philips, Boniecki & Schlenker, 1995).

Distraction

An individual may experience distraction when his focus is no longer on the task at hand, but on the distracting element. Sanders, Baron, and Moore (1978) defined a distraction as any stimulus or response requirement that is irrelevant to the primary task. Distraction occurs when an individual becomes preoccupied with other factors and is no longer focused on the task (Hatzigeorgiadis, 2005). A distraction can refer to any external or internal factor that causes an individual to consciously focus on the factor, as opposed to the task being performed. For example, an elite athlete may experience external distractions, such as crowd noise or verbal remarks by the opposing team, and visual distraction, such as the audience waving posters (Lidor, Ziv, Tenenbaum, 2013).

Distraction is related to the cognitive or mental thoughts an individual has during performance of a task. Distraction affects elite athletes by an element unrelated to the task consuming the mental state of an individual and decreasing the performance outcome. As the number of cues attended to increases the greater

motor impairment the performer exhibits (Martens & Landers, 1972). As an athlete devotes more attention to external or internal factors, the less attention the athlete gives to the performance of a task. This indicates that a negative correlation should exist between the number of distracting variables and the performance outcome, as the number of distracting variables increases the success of performance outcome should decrease.

In a high pressure situation the number of distracting variables increases and the amount of attention devoted to those distracting variables will also increase, and therefore affect the overall performance of an athlete negatively, in most situations. As memory load increases, performance of a task decreases because the individual no longer has the cognitive resources available to focus on the task (Vickers & Williams, 2007). Under stressful conditions, an athlete's attention capacity may be overloaded by task-irrelevant stimuli, increase arousal and result in impaired performance (Hill, Hanton, Fleming & Matthews, 2009). Task-irrelevant focus of attention may, therefore, cause the individual to experience performance decrement due to distraction (Mesagno & Marchant, 2013).

Anxiety is a specific form of cognitive distraction that occurs when an athlete is worried about the performance outcome instead of thinking about performing the task. The interference of an individual's anxious thoughts and concerns may lead to poor performance, as the individual is preoccupied and not focused on the task (Hardy & Parfitt, 1991). For example, interference affects performance when the individual's preoccupation is so extreme that the individual no longer has the

mental ability to focus on the task (Hardy & Parfitt, 1991). Anxiety shifts attention away from the task to worrying about performance failure, ultimately leading to impaired performance (Oudejans, Kuijpers, Kooijman & Bakker, 2011).

Uncertainty is another form of distraction that impairs performance through anticipation of the possibility of an event that will interrupt the performance of the task. In an experiment performed by Sanders and Baron (1975), individuals were introduced to a level of uncertainty through performing a task in which a distracting signal was used, but the participants were unaware of when the signal would occur. The anticipation of the interruption or, in this case, the distracting signal led to drive effects and the consumption of attention. Thus, individuals experienced drive effects because they were conflicted about whether to attend to the task or to attend to task-irrelevant distraction (Baron, Moore & Sanders, 1978).

Attention is limited and uncertainty takes a large amount of attention away from a task. Thus, an individual may perform at a less than optimal level due to uncertainty. Interrupting an individual just prior to a task leads to damaging effects or decreased performance (Freeman & Muraven, 2010). An effective form of distraction would be to produce uncertainty in an individual, then stop an individual prior to finishing a task, which together should lead to a decrease in performance outcome.

Pressure

Pressure can impair or facilitate performance based on how an athlete deals with the anxiety that comes from pressure. Pressure is the result of factors that

increase the importance of successfully performing the task (Baumeister, 1984). Performance impairment due to pressure is often associated with self-focus or explicit monitoring, as an athlete “overthinks” the task in an attempt to perform at an optimal level. In a game-winning situation the added pressure may result in performance impairment due to an athlete over-consciously thinking about an automatic response and adjusting their, once automatic, movements (Baumeister & Showers, 1986; Vickers & Williams, 2007).

Self-focus (or explicit monitoring) occurs when an individual is focused on the technical aspects of an automatic or simple task and may lead to a decrease in performance (Baumeister, 1984; Vickers & Williams, 2007). To deal with the pressure, elite athletes develop automated routines through repetitive practice. The demands of a pressure situation cause an individual to consciously process performance, but consciousness disrupts performance (Baumeister, 1984). An athlete may cognitively think about the step-by-step process of a movement, that typically is an automatic response, leading to a change in their movement (Gray, 2011).

If an elite athlete changes the movement that constantly produced favorable outcomes, then the result can be an unfavorable outcome. For example, slight movement changes of a specific skill, such as the angle of approach, changes the flight pattern of the football and the overall accuracy of performance (Anderson & Dorge, 2011; Ishii, Yanagiya, Naito, Katamoto & Maruyama, 2012). In this case, Otten (2009) states the effects of explicit monitoring, or focusing on each individual

aspect of a skill, led to decreased performance under pressure, when an athlete had already developed an automatic response.

However, some athletes are not affected by the pressure and still perform a task with the developed automatic response. An athlete may develop coping strategies to help with high amounts of pressure. In this instance, the athlete is able to cope with pressure, overcome the anxiety in a high-pressure situation, and perform at an optimal level (Anshel, Williams & Williams, 2000; Elkington, 2010; Otten, 2009). Thus, an elite athlete that performs at an optimal level is able to diminish the pressure and avoid anxious thoughts.

An individual that performs at an optimal level is able to cope with the emotion connected to a task, overcome the distracting stimulus and perform at a high level (Filho, Moraes & Tenenbaum, 2008; Robazza, Pellizzari, Bertollo, & Hanin, 2008). Conversely, on a dysfunctional level, an individual that is unable to cope with emotion and deal with the distracting stimuli is unable to perform at a high level (Filho, Moraes & Tenenbaum, 2008; Robazza, Pellizzari, Bertollo, & Hanin, 2008). Therefore, an elite athlete must prepare for the psychological arousal that one encounters during a high-pressure situation. In a high pressure situation (such as a game-winning field goal) athletes use coping strategies to overcome stress caused by pressure. Coping is the attempt to adapt to a situation and deal with the stress or pressure of the situation (Anshel, Williams & Williams, 2000). In other words, an individual evaluates how the stress will personally affect their performance and

classifies the stress as harmful, challenging, threatening or beneficial (Jordet & Elferink-Gemser, 2012).

Coping strategies consist of problem-focused, emotion-focused and avoidance coping (Jordet & Elferink-Gemser, 2012). Elite athletes often use avoidance coping in a high-pressure situation to remove negative thoughts and focus on the task (Jordet & Elferink-Gemser, 2012). Avoidance coping occurs when an individual attempts to remove himself from a stressful situation through mental thoughts or behavioral action (Hatzigeorgiadis, 2005). Anshel, Williams and Williams (2000) found that avoidance coping in sports helped decrease the effects of interfering thoughts. In other words, an athlete that did not dwell on the pressure of a situation was not affected to the same extent as an athlete who focused on the pressure of the situation.

Optimal performance of a task may be achieved if an elite athlete can find a way to cope with the pressure. Jordet and Elferink-Gemser (2012) observed the use of avoidance coping by professional soccer players during game-winning penalty shoot-outs (a penalty kick in which selected players face the opposing goalie) and found a connection between coping strategies and optimal performance. Coping strategies are more effective when an individual displays mental toughness. Mental toughness is characterized by motivation, complete devotion of attention to the task, and trusting in one's own ability to provide results (Jones, Hanton & Connaughton, 2002).

Elite athletes utilize mental toughness by developing specific attitudes to

help cope with pressure and competition (Jones, Hanton & Connaughton, 2002). Mental toughness allows an athlete to develop an ability to cope better than an opponent during competition (Jones, Hanton & Connaughton, 2002). Also, it allows an athlete to remain focused and confident under pressure (Jones, Hanton & Connaughton, 2002). The athletes apply mental toughness to individual coping strategies during a high-pressure performance, when a high performance outcome is expected. Therefore, in a game-winning pressure situation, an athlete who has developed a coping strategy may be less affected by the pressure and perform at an optimal level.

Pressure Kick

In a high-pressure situation, such as a game-winning kick, an elite athlete will respond with an optimal task performance or a less than optimal task performance. A pressure kick is a high-pressure situation that is experienced by a Division-I collegiate field goal kicker during the last minute of game time (or during overtime), when the score will result in a lead or a tie game for the kicking team (Goldschmied, Nankin, & Cafri, 2010). In this situation, the field goal kicker is placed under large amounts of pressure to successfully convert on a field goal attempt and held responsible for the outcome of the game.

In a similar situation, McEwan, Martin Ginis and Bray (2012) found in a study on NHL shootouts, “when a goal is needed to avoid a loss, the likelihood of scoring on this shot is greater when at home” (p. 580), but a “home choke is likely to occur in situations when there is an impending opportunity to claim the winner’s identity”

(p.581). For example, if a hockey team is down by 1 point in the last seconds, a hockey player is more likely to make the point at home in order to avoid losing the game. Yet, if a hockey team is tied, a hockey player at home is more likely to miss a goal in the last seconds to claim the win.

The pressure of the game-winning situation can be explained by the home field advantage or home field disadvantage along with the influence of an audience and the influence of distracting variables. Feinberg and Aiello (2006) found a link between failure in a complex task due to the combination of an evaluative audience and distracting factors. During a pressure kick in a college football game, a combination of both an evaluative audience and distracting factors exists. This leads one to believe that an amateur kicker should miss the field goal attempt, as the task is still considered complex. If distractions are responsible for dividing attention, then the more distractions one experiences the worse performance outcomes one should exhibit.

Icing the Kicker

During an “icing” scenario, the opposing coach is applying the theory of task interruption. Task interruption (or calling a timeout to ice the kicker) can lead to a decrease in performance outcome due to a kicker’s interpretation of the opponent’s intent, which is often assumed to be an act of aggression. In other words, the opposing coach calling a timeout to ice the kicker can be seen as aggression and should produce negative thoughts (Goldschmied, Nankin, & Cafri, 2010). Opposing

teams call a time-out as the football is snapped, interrupt the task and hope to produce the negative thoughts associated with aggressive interruption.

Task interruption occurs when an opposing team calls the time-out, as the ball is snapped (or ices the kicker) because the time-out is unexpected by the kicker. An opposing coach uses the time-out to establish negative thoughts resulting in non-optimal performance. Goldschmied, Nankin, Cafri (2010) compared iced and non-iced kickers in the 2002-2008 NFL seasons and took into account multiple extraneous variables. The findings indicate that using icing as a strategy does minimize the success rates of kickers in the NFL (Goldschmied, Nankin & Cafri, 2010). The psychological aspect of an icing a kicker may be the most effective variable, but does not remain the sole variable contributing to the outcome of a field goal kick.

Various Distractors

Along with the presence of an audience, the home field advantage, and icing, there are many variables that may influence the outcome of a pressure kick. Some variables that may influence the outcome of a pressure kick include: the angle of the kick, the distance of the field goal attempt, a field goal kicker's experience and the importance of the game. Environmental factors, such as weather conditions, the angle of the kick (middle of the field or from a hash mark) and prior performance by the field goal kicker in the same game, can be correlated to the kicker's performance in a game-winning situation, but have not been tested (Goldschmied, Nankin & Cafri, 2010). A college field goal kicker who makes 90 to 95 percent of field goal attempts

in practice is considered to be a good field goal kicker (Hurley, 2006). Yet, in a game situation, distracting factors, such as fan noise, nerves, the distance of the kick and angle of the kick are present and may drop a kicker's kicking percentage to 70 or 80 percent (Hurley, 2006).

Angle of Kick

A common belief in American football is that by attempting to kick a field goal from the center of the field, a kicker will make a field goal attempt more often than a field goal attempt taken from an angle. Conversely, Anderson and Dorge (2011) found that it is more effective to approach the ball at an angle increasing accuracy and the ball velocity. Thus, one would assume that a ball placed on a hash mark might lead to more successful field goal attempts than a ball placed in the center of the field.

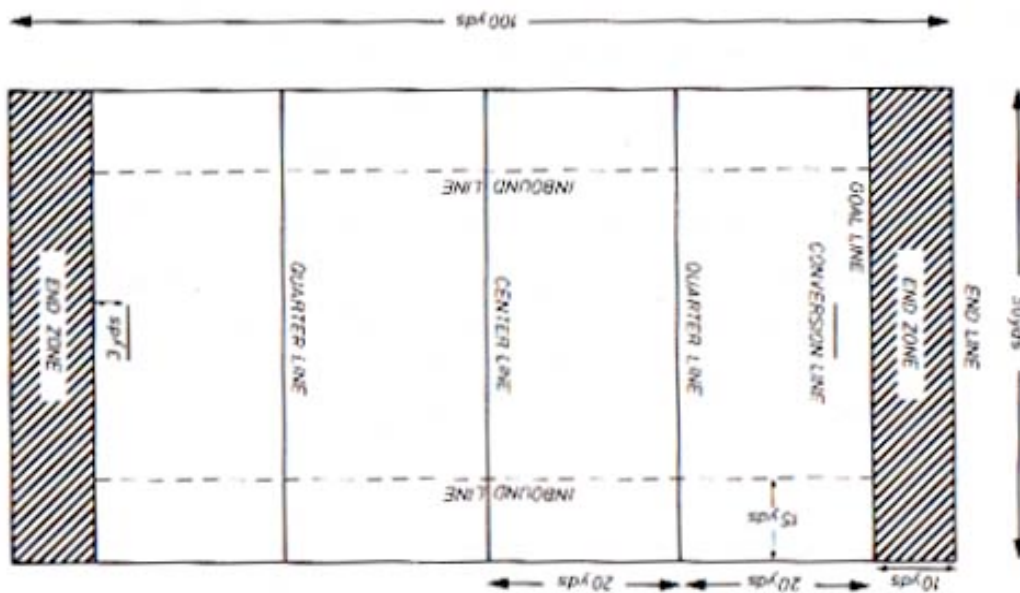


Figure 2: Inbound Line Model: This model provides of a visual of the location of inbound lines or hash marks on a football field.

In American football, the angle of a field goal kick is determined by the outcome of the previous play, because a referee will move the football laterally to allow running room on each side of the football (Isaksen, 1996). The football is placed where the player was tackled on the previous play, if the player was between the inbounds lines or hash marks (Isaksen, 1996). If the player was tackled outside the inbounds line the ball is moved to the closest inbounds line or hash mark (see Figure 2) (Isaksen, 1996).

Distance of Field Goal Kick

Movement coordination and muscular activity differentiation both contribute to the ability of a field goal kicker to perform from a set position (Koshelskaja, Kapilevich, Bajenov, Andreev & Buravel, 2012). A skilled kicker coordinates movement by decreasing the sway of his body and improves muscular activity by using the muscle directly involved in the kick performance, while decreasing the activity of other muscles (Koshelskaja, Kapilevich, Bajenov, Andreev & Buravel, 2012). The individual movement coordination is controlled by the kicker's center of gravity, the act of concentrating all the organism's mass into one spot, allowing the kicker to remain balanced throughout the kicking motion (Koshelskaja, Kapilevich, Bajenov, Andreev & Buravel, 2012). The kicker approaches a football and hits the football at a specific impact point, with a set velocity of the foot and leg and from a specific angle, each contributing to the performance outcome (Anderson & Dorge, 2011; Ishii, Yanagiya, Naito, Katamoto & Maruyama, 2012).

The impact on performance outcome due to the velocity of the kicker's foot

and the specific angle vary based on the distance of the field goal kick, along with the length of the snap. On average, a field goal kick is taken seven yards directly behind the placement of the football (Isaksen, 1996). In order to provide the kicker with an angle that produces a higher-level performance outcome, the team may snap the ball longer than seven yards or shorter than seven yards, which changes the angle of the football (Isaksen, 1996). The average seven extra yards for a snap should be considered in controlling for the length of the kick variable. A shorter or longer snap may influence accuracy of a kick based on the actual yard line an individual kicks the ball from.

Experience of Field Goal Kicker

A common belief is that with experience, an individual performs at a higher level. Goldschmied, Nankin and Cafri (2010) concluded, in a study on pressure kicks, that an individual's level of experience in the NFL did not affect the kicker's overall performance during a pressure kick. The absence of correlation can be explained by factors such as individuals having three to four years of prior experience in college football and the implementation of the draft, assuring only the most elite performers are apart of the NFL (Goldschmied, Nankin & Cafri, 2010).

The performance of a field goal kicker may be a result of past performance. Uziel (2007) determined that individuals might possess different skills due to negative social regard caused by repeated failures or positive social regard due to repeated successes. Thus, one would expect a field goal kicker with a high number

of made field goal attempts to perform at a higher level than a field goal kicker with a low number of made field goal attempts.

A pressure kick may be influenced by various distracting variables, such as the home field advantage, icing the kicker, the distance of the field goal and the experience of a field goal kicker. Therefore, the purpose of this study is to determine which distracting variables have an effect on the outcome of a pressure kick in Division-I college football. Specifically, the researcher is aiming to understand the following questions:

1. Is there a relationship between predictors cited in the literature and the success or failure of pressure kick?
2. What are the strongest predictors of a successful or failed attempt of a pressure kick?

CHAPTER THREE

METHODS

Data Collection

The purpose of this study was to determine which factors affect the success or failure of a field goal attempt by a kicker in Division I-A (now known as the Football Bowl Subdivision (FBS)) football of the NCAA during a pressure kick. Archival data was used in order to study the statistical significance of the home field advantage and distracting factors that may influence a collegiate field goal kicker's ability to successfully make a pressure kick attempt.

Participants

Data was collected from FBS conferences that received an automatic bid to the Bowl Championship Series (BCS), which included: the Southeastern (SEC), Atlantic Coast Conference (ACC), Big 10, Big 12, Big East, and Pacific-12 (Pac-12). Each of these conferences had established themselves in the college football environment, as the conference champion received an automatic BCS bowl bid. One NCAA FBS season traditionally consists of 12 games per team, with the possibility of 13 or 14 games. A team may play in a conference championship or bowl game during a season leading to 13 or 14 games. Approximately 4,500 games were reviewed to meet the criteria. Any game played by one of the six conferences during the 2006-2012 seasons that resulted in a pressure kick, or any field goal kick, during the last minute of game time (or during overtime), that could result in a lead or a tie game for the kicking team (Goldschmied, Nankin, & Cafri, 2010), was included as a

test data point.

Measurement

The researcher collected variables that were observable and recognizable. Each of the collected variables informed the psychological components of behavior and helped to determine how to cope in a pressure situation. For example, if data suggested that icing the kicker was a determining factor in the outcome of a pressure kick, then the increased amount of pressure may have increased anxiety and determined a task outcome.

Data was recorded for any field goal attempt that occurred in the last minute of the game or overtime. The researcher extracted and documented the following information pertaining to each pressure kick: the week the game was played in the season, whether either team was ranked (and the ranking), whether the field goal attempt was missed, made or blocked, the kicker's overall kicking percentage, whether the field goal kicker's team was at home, away or at a neutral site, the difference in the score (tied, behind 1 point, behind 2 points, or behind 3 points), if the kick occurred during regulation and the time on the clock, if the kick occurred during overtime and which overtime, the conference of the kicking team and opposing team, the distance of the field goal, the kicker's kicking percentage from the field goal distance, whether the kicker was iced, whether the kicking team called a time-out, the kicking team's winning percentage for the season, the home team's home winning percentage for the season, the away team's away winning percentage for the season, and how many field goal attempts the kicker made and missed

during the game prior to the pressure kick.

The information was recorded into an excel file and converted to a numerical value in SPSS. A list of questions was asked and the answers were recorded, based on the information provided for that pressure kick attempt. The answer was translated into a numerical value found in the codebook (see Appendix A).

Procedures

The researcher collected data from ESPN college football scoreboard, for NCAA FBS games played during seven consecutive football seasons (2006 college football season through 2012 college football season). The researcher started with the 2006 football season and collected data for each conference (ACC, Big 10, Big 12, Pac-12, Big East, SEC) during each week of the football season. Next, the researcher looked through the final score of the games. If the game resulted in overtime or a score within three points of each other, a pressure kick may have occurred. The researcher read the play by play of the fourth quarter or overtime to see if it resulted in a pressure kick, or a field goal kick, during the last minute of game time (or during overtime), which could result in a lead or a tie game for the kicking team (Goldschmied, Nankin, & Cafri, 2010).

The play by play provided the following information: the week the game was played during, whether either team was ranked (and the ranking), whether the field goal attempt was a success or a failure, whether the field goal kicker's team was at home, away or at a neutral site, the difference in the score (tied, behind 1 point, behind 2 points, or behind 3 points), the time left on the clock or overtime, the

length of the field goal, the conference of the home and away team, and whether the kicker was iced. The field goal kicker's overall kicking percentage and the kicker's kicking percentage from the field goal distance were provided through individual season stats and the kicking team's winning percentage was provided by individual team stats. Icing was believed to have taken place if the opposing team called a timeout before the pressure kick.

After the data was collected and recorded, a second researcher verified ten percent of the data to ensure reliability of the recorded information. The review of ten percent of the data by an independent observer was used to test inter-rater reliability (Vaz, Rooyen & Sampaio, 2010). A review of ten percent of the data by an independent observer led to a disagreement in less than one percent of the data collected. This finding led to the determination that the data set was reliable.

In order to analyze the data, a binary logistic regression was run to determine which variables were the best predictors of the outcome of a pressure kick. In this statistical analysis, the outcome of the pressure kick was the dependent variable that was potentially affected by the independent variables, or all other data points. The first logistic regression run contained independent variables that the literature suggested should affect the outcome of the pressure kick, for example, if the kicker was iced, the distance of the field goal and the kicker's kicking percentage. Secondly, additional independent variables were added to a second binary logistic regression model in order to determine if any other independent variables were significant predictors of the outcome of a pressure kick.

CHAPTER FOUR

PRESSURE KICKS: IDENTIFYING PREDICTORS OF A SUCCESSFUL PRESSURE KICK AND THE ROLE OF ICING THE KICKER IN DIVISION-I COLLEGE FOOTBALL

Abstract

Purpose

The literature surrounding distraction and pressure has shown that elite athletes in a high-pressure, game-winning situation will perform a task at an optimal or less than optimal level based on how well they have mastered a particular task. The purpose of this study is to determine which ten distracting variables may have an effect on the outcome of a pressure kick in Division-I college football.

Design/methodology/approach

Archival data was collected from ESPN college football scoreboard for NCAA FBS games played during seven consecutive football seasons (2006 college football season through 2012 college football season). In the seven seasons approximately 4,500 games had the potential to result in a pressure kick. Yet, only 358 pressure kicks occurred, but only 324 cases were applicable due to missing information.

Findings

The overall team performance and the individual kicker's ability to kick from a given field goal distance were found to be the two strongest predictors of the success of a pressure kick. Given these two measures, the data set was able to predict if the kicker successfully made a pressure kick attempt, with or without being iced, 9 out of 10 times.

Implications

Understanding the influence that various factors have on a pressure kick can

aid a college football coach in determining the outcome of a pressure kick. Also, the results may aid in determining when to use a timeout based on the opposing teams performance and the kicker's ability level.

Originality/value

This is one of a few studies to provide evidence on the effectiveness of icing the kicker in the NCAA. The statistics demonstrate icing a kicker to be ineffective, which contradicts the conventional belief that a coach should use a timeout to increase the anxiety level of a kicker and ultimately "get in" the kicker's head.

Key words

Pressure, pressure kick, icing the kicker, college football, distraction, performance, field goal, NCAA, anxiety

Introduction

American football is a game containing various types of distraction due to the pressure to win. Thus, an elite athlete experiences high amounts of pressure when placed in a game-winning situation. Yet, pressure is a distracting factor that can draw an elite athlete's attention away from the task and cause them to place their focus on the pressure to win. Distraction produces drive like effects on task performance such as high amounts of anxiety or arousal (Cottrell, Wack, Sekerak & Rittle, 1968; Baron, Moore & Sanders, 1978). Sanders, Baron, and Moore (1978) defined a distraction as any stimulus or response requirement that is irrelevant to the primary task. Distracting conditions are attributed with producing higher levels of arousal (or anxiety) that lead to divided attention (Cottrell, Wack, Sekerak & Rittle, 1968).

Distraction is often a result of a pressure situation that can be experienced by an elite athlete during a professional sporting event. According to Baumeister (1984) pressure is defined as "any factor or combination of factors that increases the importance of performing well on a particular occasion" (p.610). Therefore, pressure either results in performance at an optimal level or less than optimal level based on the level of anxiety a performer experiences. As a result, pressure and high levels of anxiety are said to cause individuals to perform at a low level when the performer's abilities dictate he should have done better (Baumeister & Showers, 1986).

A pressure kick is arguably one of the most competitive tasks an American football field goal kicker experiences due to the pressure of the game-winning situation. Pressure kicks are classified as a field goal kick, during the last minute of game time (or during overtime), which will result in a lead or a tie game for the kicking team (Goldschmied, Nankin, & Cafri, 2010). During this time, the kicker is often placed on the field during the last play of the game and is left with the task to win, with only a few seconds left on the clock. In this situation, a field goal kicker is under a large amount of pressure to perform.

In American college football, icing the kicker is a task interruption tactic that has been developed to influence a pressure kick. "Icing occurs when a kicker, who is about to initiate a movement toward a game-deciding kick, is stopped in his tracks as a time-out is requested by the opposing coach. This act forces the player to wait an additional period of time before the kick execution" (Goldschmied, Nankin & Cafri, 2010, p.301). In theory, a kicker that has been iced should miss a field goal attempt, because he has a longer period of time to think about the importance of the kick, leading to an increase in anxiety. Due to the distracting nature of icing the kicker, kickers whom are iced under pressure should miss more field goal attempts than kickers who are not iced under pressure, however many are still successful given the situation.

Therefore, based on the literature surrounding distraction and pressure, elite athletes in a high-pressure game-winning situation will either perform at an optimal or less than optimal level based on how each distracting variable influences the

athlete. Thus, the purpose of this study is to determine which variables have an effect on the outcome of a pressure kick in Division-I college football. In other words, is there a relationship between predictors cited in the literature and the success or failure of pressure kick? Secondly, based on the relationship between the predictors and the performance outcome, what are the strongest predictors of a successful or failed attempt of a pressure kick?

Literature Review

Distraction

A pressure kick may be affected by multiple variables, including some variables that lead to distraction. For example, an individual may experience distraction when his focus is no longer on the task at hand, but on the distracting element, such as a baseball player focusing on what the opposing team's catcher is saying instead of focusing on hitting the baseball being pitched. Distraction occurs when an individual becomes preoccupied with other factors and is no longer focused on the task (Hatzigeorgiadis, 2005). Some distractions are environmental stressors or related to the outcome of the task, such as the score of the game or failing to perform, while other distractions come from the opposing team, such as verbal remarks (Jordet & Elferink-Gemser, 2012). A distraction can refer to any external or internal factor that causes an individual to consciously focus on the factor, as opposed to the task being performed. For example, an elite athlete may experience external distractions, such as crowd noise or verbal remarks by the

opposing team, and visual distraction, such as the audience waving posters (Lidor, Ziv, Tenenbaum, 2013).

Distraction affects elite athletes by shifting part of their attention to an element unrelated to the task and potentially decreasing the performance outcome. As the number of cues attended to increases, the greater performance impairment the individual may exhibit (Martens & Landers, 1972). As an athlete devotes more attention to external factors, such as noise level, or internal factors, such as anxiety, the less attention the athlete gives to the performance of a task. This indicates that a negative correlation should exist between the number of distracting variables and the performance outcome, as the number of distracting variables increases the likelihood of a successful performance outcome should decrease.

If the number of distracting variables increases in a pressure situation, the amount of attention devoted to the distracting variables will also increase, and thus affect the overall performance of an athlete negatively, in most situations. As memory load increases, or an individual focuses on multiple variables, performance of a task decreases because the individual no longer has the cognitive resources available to focus on the task (Vickers & Williams, 2007). For example, if a football player is focused on the noise level of the crowd, the score of the game, how much time is on the clock and the pressure to win, he is more likely to experience a decrease in performance than a football player solely focused on performing the task. Under stressful conditions, an athlete's attention capacity may be overloaded by task-irrelevant stimuli, such as fan noise, movement, or comments by the

opposing team, which increases arousal and results in impaired performance (Hill, Hanton, Fleming & Matthews, 2009). Task-irrelevant focus of attention may, therefore, cause the individual to experience performance decrement due to distraction (Mesagno & Marchant, 2013).

Anxiety is a specific form of cognitive distraction that occurs when an athlete is worried about a performance outcome instead of thinking about performing the task. The interference of an individual's anxious thoughts and concerns may lead to poor performance, as the individual is preoccupied and not focused on the task (Hardy & Parfitt, 1991). Interference affects performance when the individual's preoccupation is so extreme that the individual no longer has the mental ability to focus on the task (Hardy & Parfitt, 1991). Anxiety shifts an athlete's attention away from the task to worrying about performance failure, because he does not want to disappoint his teammates or the fans, which ultimately leads to impaired performance (Oudejans, Kuijpers, Kooijman & Bakker, 2011). For example, when a basketball player is attempting a free throw, he may be focused on pleasing the fans and comments made by the opposing team. As the basketball player shifts his focus to pleasing the fans and what the opposing players are saying, he no longer has the ability to focus on the task.

Pressure

Pressure can impair or facilitate performance based on how an athlete deals with the anxiety that comes from pressure. Pressure is the result of factors that increase the importance of successfully performing a task (Baumeister, 1984).

Performance impairment resulting from pressure is often associated with self-focus or explicit monitoring, as an athlete “overthinks” the task in an attempt to perform at an optimal level. In a game-winning situation the added pressure may result in performance impairment due to an athlete over-consciously thinking about a movement and adjusting their once automatic movements (Baumeister & Showers, 1986; Vickers & Williams, 2007).

As a result, self-focus (or explicit monitoring) occurs when an individual is focused on the technical aspects of an automatic or simple task and may lead to a decrease in performance (Baumeister, 1984; Vickers & Williams, 2007). To deal with the pressure, elite athletes develop automated routines through repetitive practice, such as a baseball player developing a routine for every swing of the baseball bat. The demands of a pressure situation cause an individual to consciously process the task response, but overthinking a response may lead to a decrease in performance (Baumeister, 1984). For example, an athlete may cognitively think about the step-by-step process of a movement, that typically is an automatic response, leading to a change in their movement (Gray, 2011). Thus, when an athlete is focused on the movement it may lead to a decrease in the amount of focus placed on the performance outcome, because they are cognitively thinking about the task.

If an elite athlete changes the movement that constantly has produced favorable outcomes, then the result can be an unfavorable outcome. For example, slight movement changes of a specific skill, such as the angle of approach, changes

the flight pattern of the football and the overall accuracy of performance (Anderson & Dorge, 2011; Ishii, Yanagiya, Naito, Katamoto & Maruyama, 2012). In this case, Otten (2009) states the effects of explicit monitoring, or focusing on each individual aspect of a skill, led to a decrease in performance under pressure, regardless of the automatic response previously developed by the athlete.

However, some athletes are not affected by the pressure and are still able to automatically perform a task or movement without consciously thinking about the movement. An athlete may develop coping strategies to help with high amounts of pressure. If the individual is able to cope with the pressure, he will overcome the anxiety in a high-pressure situation and perform at an optimal level (Anshel, Williams & Williams, 2000; Elkington, 2010; Otten, 2009). When an individual is able to diminish the pressure and avoid anxious thoughts, then he can perform at an optimal level. An elite athlete must prepare for the psychological arousal that one encounters during a high-pressure situation.

In a high pressure situation (such as a game-winning field goal) athletes use coping strategies to overcome stress caused by pressure. Coping is the attempt to adapt to a situation and deal with the stress or pressure of the situation (Anshel, Williams & Williams, 2000). For example, in front of an audience, a golfer's hand may begin to tremble which forces him to use a coping mechanism, such as finding a way to switch his grip, in order to perform at an optimal level (Wallace, Baumeister & Vohs, 2005). Optimal performance of a task may be achieved if an elite athlete can find a way to cope with the pressure. Jordet and Elferink-Gemser (2012) observed

the use of coping in professional soccer players during the game-winning penalty shoot-outs (a penalty kick in which selected players face the opposing goalie), and found that during different points of the penalty kick different distractions and levels of pressure exist. For example, athletes experience different amounts of pressure and distractions during the empty time after the game before the shootout, while walking to the field and during the kick (Jordet & Elferink-Gemser, 2012). The use of different coping strategies depending on the types of pressure an athlete is experiencing may lead to successful performance of a task.

Pressure kick

In a high-pressure situation, such as a game-winning kick, an elite athlete will respond with a coping strategy, such as avoidance or trying to ignore negative comments from the audience, to increase the likelihood of a successful performance. If an athlete is unable to apply a coping strategy, the pressure will overtake the player and lead to a failed performance. The pressure in a game-winning situation can be explained by the influence of distracting variables, such as the amount of time left on the clock or the score of the game.

When placed under large amounts of pressure, an elite athlete will respond with an optimal task performance or a less than optimal task performance. A pressure kick is a high-pressure situation that is experienced by a Division-I collegiate field goal kicker during the last minute of game time (or during overtime), when the score will result in a lead or a tie game for the kicking team (Goldschmied, Nankin, & Cafri, 2010). In this situation, the field goal kicker is placed under large

amounts of pressure to successfully convert on a field goal attempt and held responsible for the outcome of the game.

The performance outcome is due to the athlete's mastery of a task, along with their ability to cope with the pressure and avoid distraction. Feinberg and Aiello (2006) found a link between failure in a complex task due to the combination of an evaluative audience and distracting factors. During a pressure kick in a college football game, a combination of both an evaluative audience, such as an audience with high expectations for the kicker, and distracting factors exists. This leads one to believe that an amateur kicker should miss the field goal attempt more often, as the task is still considered complex. If distractions are responsible for dividing attention, then the more distractions one experiences the worse performance outcomes one should exhibit.

Icing the Kicker

During an "icing" scenario, the opposing coach is applying the theory of distraction through aggression. Calling a timeout to ice the kicker can lead to a decrease in performance outcome due to a kicker's interpretation of the opponent's intent, which is often assumed to be an act of aggression (Goldschmied, Nankin, & Cafri, 2010). This tactic is often viewed as an act of aggression because the opposing team is attempting to interrupt the task in order to allow time for the kicker to dwell on what happens if he misses the kick. In other words, the opposing coach calling a timeout to ice can be seen as aggression and should produce negative thoughts (Goldschmied, Nankin, & Cafri, 2010). Opposing teams call a time-out before the

football is snapped and hope to produce the negative thoughts associated with aggressive interruption.

An opposing coach uses the time-out to establish negative thoughts resulting in non-optimal performance. Goldschmied, Nankin, Cafri (2010) compared iced and non-iced kickers in the 2002-2008 National Football League (NFL) seasons and took into account multiple extraneous variables. The findings indicate that using icing as a strategy does minimize the success rates of kickers in the NFL (Goldschmied, Nankin & Cafri, 2010). The psychological aspect of icing a kicker may be the most effective variable, but does not remain the sole variable contributing to the outcome of a pressure kick attempt.

Influential Variables

Although icing is seen as a main contributor to the success of a pressure kick, there are many variables that may influence the outcome of a pressure kick. The variables that may influence the outcome of a kick include: the length of the field goal, a field goal kicker's experience and the importance of the game. A college field goal kicker who makes 90 to 95 percent of field goal attempts in practice is considered to be a good field goal kicker (Hurley, 2006). Yet, in a game situation, distracting factors such as fan noise, nerves, field goal distance and the angle of the kick, are present and may drop a kicker's kicking percentage to 70 or 80 percent (Hurley, 2006).

Distance of Field Goal Kick

Movement coordination and muscular activity differentiation both contribute

to the ability of a field goal kicker to perform from a set position (Koshelskaja, Kapilevich, Bajenov, Andreev & Buravel, 2012). A skilled kicker coordinates movement by decreasing the sway of his body and improves muscular activity by using the muscle directly involved in the kick performance, while decreasing the activity of other muscles (Koshelskaja, Kapilevich, Bajenov, Andreev & Buravel, 2012). The individual movement coordination is controlled by the kicker's center of gravity, the act of concentrating all the organism's mass into one spot, allowing the kicker to remain balanced throughout the kicking motion (Koshelskaja, Kapilevich, Bajenov, Andreev & Buravel, 2012). Thus, a kicker approaches the football and hits the football at a specific impact point, with a set velocity of the foot and leg, and from a specific angle, each attributing to the performance outcome (Anderson & Dorge, 2011; Ishii, Yanagiya, Naito, Katamoto & Maruyama, 2012).

The impact on performance outcome due to the velocity of the kicker's foot and the specific angle vary based on the distance of the field goal kick, along with the length of the snap. However, on average a field goal kick is taken seven yards directly behind the placement of the football (Isaksen, 1996). In order to provide the kicker with an angle that produces a higher-level performance outcome, the team may snap the ball longer than seven yards or shorter than seven yards, which changes the angle of the football (Isaksen, 1996). A shorter or longer snap may influence the accuracy of a kick based on the actual yard line a pressure kick attempt is taken.

Experience of Field Goal Kicker

A common belief is that with experience, an individual performs at a higher level. Goldschmied, Nankin and Cafri (2010) concluded in a study on pressure kicks that an individual's level of experience in the NFL did not affect the overall performance during a pressure kick. The absence of correlation can be explained by factors such as individuals having three to four years of prior experience in college football and the implementation of the draft, assuring only the most elite performers are apart of the NFL (Goldschmied, Nankin & Cafri, 2010). However, in Division-I college football, the experience of a kicker or the kicker's ability to kick from a large range of distances may have a large impact on the outcome of the pressure kick.

Similarly, the performance of a field goal kicker may be a result of past performance. Uziel (2007) determined that individuals might possess different skills due to negative social regard caused by repeated failures or positive social regard due to repeated successes. In other words, a player's confidence level may affect the outcome of a pressure kick due to his past performance. Thus, one would expect a field goal kicker with a high number of made field goal attempts, or a higher confidence level, to perform at a higher level than a field goal kicker with a low number of made field goal attempts, or a lower confidence level.

A pressure kick may be influenced by various distracting variables, such as icing the kicker, the distance of the field goal and the experience of a field goal kicker. Therefore, the purpose of this study is to determine which variables have an

effect on the outcome of a pressure kick in Division-I college football. Specifically, the researcher is aiming to understand the following questions:

1. Is there a relationship between predictors cited in the literature and the success or failure of pressure kick?
2. What are the strongest predictors of a successful or failed attempt of a pressure kick?

Methods

Subjects

The cases in this study were pressure kicks that occurred within Division I-A football (now known as Football Bowl Subdivision (FBS)) of the National Collegiate Athletic Association (NCAA) during seven consecutive football seasons (2006-2012). The FBS subdivision includes: The Southeastern Conference (SEC), The Atlantic Coast Conference (ACC), The Big 10, The Big 12, The Big East, and The Pacific-12 (Pac-12). The cases were recorded through the use of archival data, in which approximately 4,500 games resulted in a three-point difference or overtime. Of those games, 358 games ended in a pressure kick, or any field goal kick, during the last minute of game time (or during overtime), which could result in a lead or a tie game for the kicking team, in other words a point differential of three points or less prior to the kick in the last minute of the game (Goldschmied, Nankin, & Cafri, 2010). The cases were excluded if a pressure kick did not occur in the last 60 seconds of the game or in overtime. Of the 4,500 games concluding with a three-point difference in the score or overtime, 358 games fit the criteria of a pressure

kick (~8%).

Procedures

After determining a pressure kick had occurred during the last minute of the game or overtime, through the use of ESPN college football scoreboard, information on the influence variables was recorded. For each pressure kick the researcher collected the following data: If the kicker missed or made the field goal attempt, the kicker's overall kicking percentage for the season, the kicker's kicking percentage from the field goal distance, the kicking team's winning percentage for the season, if the kicker was or was not iced, the difference in the total score (1 point, 2 points, 3 points or tied), if the kicker's team was home, away, or at a neutral site, the exact field goal distance, if the kicking team was ranked in the top 25, how many field goal attempts the kicker missed during the game prior to the pressure kick, and how many field goal attempts the kicker made during the game prior to the pressure kick.

After the data was collected and recorded, a second researcher verified ten percent of the data to ensure reliability of the recorded information. The review of ten percent of the data by an independent observer was used to test inter-rater reliability (Vaz, Rooyen & Sampaio, 2010). A review of ten percent of the data by an independent observer led to a disagreement in less than one percent of the data collected. This finding led to the determination that the data set was reliable.

Statistics

A binary logistic regression was used to determine which variables were the best predictors for the outcome of a pressure kick, because the dependent variable (if the pressure kick was made or missed) was categorical with only two possible outcomes. The binary logistic regression is one of the most accurate ways to measure the relationship between multiple independent variables and a categorical, dichotomous, dependent variable. The data output provided the predicted probability for the two outcomes of the dependent variable.

Results

A total of 358 cases of a pressure kick were identified during the NCAA FBS 2006-2007 to 2012-2013 football seasons. Of these 117 (32.7%) were missed field goal attempts and 241 (67.3%) were made field goal attempts (see Table 1). The median distance for a pressure kick was 37 yards, with the shortest attempt being 17 yards and the longest attempt being 63 yards. Of the 358 kicks, 150 (41.9%) occurred on the kicker's home field, while 165 (46.1 %) occurred on the opposing teams field. Only 12 percent (43 kicks) occurred during a game played at a neutral site. Over half the pressure kicks (57%) occurred during a tie game, meaning the difference in the total score of the game was zero.

A team ranked in the top 25 attempted a pressure kick only 32.7 percent of the time (117 kicks) versus 67.3 percent of unranked teams (241 kicks). The median team season winning percentage of a team attempting a pressure kick was 61.5 percent, where the lowest team winning percent was zero and the highest team

winning percentage was 100. Of the 358 cases, only 340 cases had data to determine if a kicker was iced or not before a field goal attempt. The 340 cases lead to 115 cases of icing (32.1%) and 225 cases where icing did not occur (62.8%). On average a field goal kicker attempting a pressure kick had a kicking percentage of 75 percent from the given field goal distance.

Table 1 Percentage of field goal attempts missed and made (N = 358)

Missed		Made	
Frequency	Percent	Frequency	Percent
117	32.7	241	67.3

Logistic Regression Trial One

A binary logistic regression analysis was used to determine if any factors were significant predictors for the outcome of a pressure kick (n=324). The variables entered into the model were based upon suggestions from the literature and included: the kicker’s overall kicking percentage, the kicker’s kicking percentage from the field goal distance, the kicking team’s season winning percentage, if the kicker was iced, the difference in the total score, if the kicking team was home, away or at a neutral site, and the exact field goal distance.

Each individual has different skills that are affected by repeated failures and successes that lead to various performance outcomes (Uziel, 2007). Thus, one would assume that a kicker’s overall kicking percentage, a kicker’s kicking percentage from a field goal distance and a team’s season winning percentage will influence how a team performs in a pressure situation. A team or individual that

has mastered a task should have a higher winning or kicking percentage and should be more successful in a pressure situation. Goldschmied, Nankin and Cafri's (2010) found that icing the kicker was effective in the NFL, but the location of the game and the score did not influence the outcome of a pressure kick. Thus, the variables were included to see if the same results were found for Division-I college football. Lastly, the distance was added to the model, as a kicker's ability to approach a football and hit the football at a specific impact point dictates if the kicker will successfully perform the task (Anderson & Dorge, 2011; Ishii, Yanagiya, Naito, Katamoto & Maruyama, 2012).

Table 2 Logistic Regression One Significance

	B	S.E	Wald	P-value	Exp(B)
What was the kicker's overall kicking percentage for the season?	.010	.018	.309	.578	1.010
What was the kicker's kicking percentage from the field goal distance?	.059	.011	29.317	.000	1.061
Was the kicker iced?	-.095	.354	.071	.789	.910
What was the kicking teams winning percentage for the season?	.005	.009	.312	.576	1.005
What was the difference in the total score?	-.087	.127	.471	.492	.917
Was the kicker's team home, away, or at a neutral site?	-.381	.236	2.591	.107	.683
What was the exact field goal distance?	-.042	.025	2.790	.095	.959

According to the model, the only significant variable in determining the outcome of a pressure kick was the kicker's ability to kick from a given field goal

distance, as the p-value for the variable is less than $\alpha=0.05$ (see Table 2). The first binary logistic regression model had a chi square (χ^2) value of 161.307 with seven degrees of freedom (Nagelkerke $R^2 = 55\%$). The model correctly classified 80.6 percent of the pressure kick cases. The model predicted that 89.5 percent of the time, or approximately 9 out of 10 times, a kicker will make the pressure kick and approximately 62 percent of the time a kicker will miss a pressure kick (see Table 3).

Table 3 Prediction of Made or Missed Field Goal Attempts (N=324)

Observed		Predicted		Percentage Correct
		Did the kicker miss or make the field goal attempt?		
		Missed	Made	
Did the kicker miss or make the field goal attempt?	Missed	65	40	61.9
	Made	23	196	89.5
Overall Percentage				80.6

Logistic Regression Trial Two

A second binary logistic regression analysis was used to determine if different factors were significant predictors of the outcome of a pressure kick (n=337). The variables entered into the model were assumed to impact the outcome of a pressure kick: the kicker's kicking percentage from the field goal distance, if the kicking team was ranked in the top 25, how many field goal attempts the kicker missed during the game prior to the pressure kick, and how many field goal attempts the kicker made during the game prior to the pressure kick.

The team ranking indicates which teams are consider the most elite teams, in other words those teams ranked in the top 25 should perform at a higher rate and

will most likely have a more elite kicker. The top 25 teams are seen as the best teams in the league and may be more likely to successfully win in a game-winning situation. The number of missed and made kicks in a game may influence how an individual performs a task. For example, if a kicker has missed all the field goal attempts in the game, then the repeated failures may be “in his head” and he may have a harder time making a pressure kick.

Table 4 Logistic Regression Two Significance

	B	S.E	Wald	P-value	Exp (B)
What was the kicker’s kicking percentage from the field goal distance?	.074	.008	79.071	.000	1.077
Was the kicking team ranked in the top 25?	-.694	.336	4.263	.039	.500
How many field goal attempts did the kicker MISS during the game prior to the pressure kick?	.020	.184	.012	.913	1.020
How many field goal attempts did the kicker MAKE during the game prior to the pressure kick?	-.142	.139	1.034	.309	.868

According to the model, the only significant variables in determining the outcome of a pressure kick were the kicker’s ability to kick from a given field goal distance and if the kicking team was ranked in the top 25, as the p-values for the variables are less than $\alpha=0.05$ (see Table 4). The second binary logistic regression model is a stronger model in predicting the outcome of a pressure kick, as there was an increase in the chi square value ($\chi^2=163.668$, $df=1$). The Nagelkerke R^2 remained the same at 55 percent. This model correctly classified 80.1 percent of the pressure kick outcomes. The model predicted that a kicker will successfully make a field goal

attempt 90.3 percent of the time, or approximately 9 out of 10 times (see Table 5).

Also, the model predicted that a pressure kick resulted in a missed attempt approximately 59.1 percent of the time.

Table 5 Prediction of Made or Missed Field Goal Attempts (N=337)

Observed		Predicted		
		Did the kicker miss or make the field goal attempt?		Percentage Correct
		Missed	Made	
Did the kicker miss or make the field goal attempt?	Missed	65	45	59.1
	Made	22	205	90.3
Overall Percentage				80.1

Discussion

The data analyses lead to the conclusion that not all variables are the best predictors for the outcome of a pressure kick. According to the literature, multiple variables should impact the outcome of a pressure kick in FBS Division-I college football. However, in this research only two variables were effective in predicting the success or failure of a pressure kick attempt. The performance of the team and the performance of the individual kicker were found to be the two best measures in determining if a kicker will make or miss a pressure kick. Given the information on the two variables, if the kicking team is ranked in the top 25 and the kicker’s kicking percentage from a field goal distance, the model predicted 9 out of 10 times that the kicker would make the field goal attempt.

Uziel (2007) determined that an individual's performance might be influenced by past performance. Thus, one would assume that the kicking percentage at a specific field goal distance, along with a kicker's overall kicking percentage and the kicking team's overall winning percentage should influence the outcome of a pressure kick. Yet, the only variable that was found to have an influence on the outcome of a pressure kick was the kicker's kicking percentage from the field goal distance. Therefore according to the model, the ability of a kicker to kick from a large range of distances will give a team an advantage in a pressure kick situation, as the kicker's kicking ability will affect the outcome of a pressure kick, 90 percent of the time.

The exact field goal distance may be a large contributor to the success or failure of a field goal kick based on the kicker's ability level. The distance of the field goal may influence the outcome of a pressure kick due to the kicker's ability to approach a football with a set velocity at specific angle and impact point (Anderson & Dorge, 2011; Ishii, Yanagiya, Naito, Katamoto & Maruyama, 2012). Thus, as the length of the field goal increases, a kicker's ability to successfully make the field goal attempt may decrease. According to the binary logistic regression models, the distance is not the determining factor (or significant) in predicting the outcome of a pressure kick. However, in the models, the kicker's ability to kick from that specific distance is significant in predicting the outcome of a pressure kick. As a kicker's range improves, or ability to kick from a larger range of distances, he becomes a more effective kicker. Thus, when a pressure kick attempt is taken within a kicker's

comfort zone, or range, he is more likely to successfully make the pressure kick attempt. Yet, if a pressure kick is taken outside of his comfort zone, or range, he is more likely to miss the pressure kick attempt.

In past research, the difference in the total score and if the kicking team was home, away or at a neutral site has been seen as unimportant in the success or failure of a field goal kicker. Goldschmied, Nankin and Cafri's (2010) findings lead to the determination that the location of the game (whether the team was home or away) and the difference in the total score did not have an impact on the outcome of a pressure kick at the professional level. These variables were also found to be insignificant in this study, which supports the findings in the research done by Goldschmied, Nankin and Cafri's (2010).

Icing the kicker is believed by most fans and coaches to have a large impact on the outcome of a pressure kick. According to Goldschmied, Nankin and Cafri (2010) using icing as a strategy does minimize the success rates of kickers in the NFL. Therefore, these finding indicate that icing a kicker can influence the outcome of a pressure kick. Thus, one would assume if icing the kicker at the professional level is effective then it should be effective at the college level. However, the opposite was found for the college level. Icing the kicker was not found to be effective in predicting the outcome of a pressure kick. The different findings may be explained by the amount of pressure a college athlete faces versus the amount of pressure a professional athlete faces. A professional athlete's livelihood depends on their ability to successfully perform a task in a pressure situation, as they are being

paid to win. Thus, with a larger amount of pressure icing the kicker may be a more effective tactic. Icing the kicker is not statistically supported, but may continue to be a superstition of the audience and therefore a necessary act for a coach.

The public perception of icing the kicker is that it is an effective method, and a coach may receive criticism if he decides against calling the time-out. The statistics state that icing the kicker is ineffective, but the public perception may be more important to consider in the game of football, because it is a game of strategy, numbers and in part superstition. If the fans and players believe that icing is effective, a coach may do the team a disservice by not icing the kicker. The support of the audience is crucial, as an unsupportive audience may lead to a decrease in performance (Epting, Riggs, Knowles & Hanky, 2011). For example, an unsupportive audience was found to affect the performance of a professional pitcher by decreasing the number of strikes he threw (Epting, Riggs, Knowles & Hanky, 2011). The audience plays a large role in the success or failure of a team, and a coach needs to keep the support of the fans and players in order to be successful in coaching a team to win games.

According to the models, the two best measures for predicting the outcome of a pressure kick are the individual kicker's ability level and the team's ability level. In this data set 90 percent of the kicks were predicted correctly based on the two variables, a kicker's kicking percentage and the teams ranking. Thus, in a game-winning situation, a coach may decide to save a timeout based on the team's overall performance and the individual kicker's performance level at various distances.

Implications

This research provides insight into which variables are important for a coach to pay attention to when the game is on the line and the outcome of a kick has the potential to determine the winner of the game. In a game-winning situation, the opposing coach should strive to keep the field goal kicker out of his comfort zone, or the range of field goal distances where his kicking percentage is high, or between 70 and 80 percent (Hurley, 2006). It is important to keep in mind that on average a field goal attempt is taken seven yards behind the placement of the ball (Isaksen, 1996). If a team can keep the kicker out of his comfort zone, they have a higher chance of winning the game, because a field goal kicker is less likely to make a field goal attempt when he is outside of his field goal range.

On the other hand, a coach may want to consider the importance of recruiting a field goal kicker with the ability to kick from a larger range of distances, which will increase the possibility of the kicker successfully converting a field goal attempt in a high-pressure situation. Therefore, the team may have a greater chance at winning the game in the last minute due to the kicker's ability. It may be that coaches should look into using a scholarship spot for an elite kicker, so that game-winning situations may play out in their favor. An elite field goal kicker can be classified as a kicker who makes 90 to 95 percent of the field goal attempts taken in practice (Hurley, 2006).

A field goal kicker has the potential to win or lose a game for the coach in a high-pressure or game-winning situation. College football games result in a game-

winning pressure kick situation approximately 8 percent of the time (358/4500 games). Thus, over the course of one football season, if a kicker successfully makes a field goal attempt the team could gain one additional win.

Lastly, the study suggests, according to the statistics, that icing the kicker is not effective in minimizing the success rate of a kicker. This study goes against conventional beliefs and provides coaches with the ability to make a decision on saving or using a timeout in the last minute of a game. The research shows that using a timeout to ice the kicker is ineffective and it may be wiser to save the timeout to use for another cause. However, the fans believe icing the kicker is effective and it may be that this belief leads coaches to icing the kicker in order to satisfy fans superstitions.

In a game-winning situation, a coach must decide if he will rely on the statistics or the superstition to please the fans. If there is the possibility of getting the ball back and receiving another chance to score a touchdown or a field goal, than the coach should consider saving the time-out in order to stop the clock and give the team time to set-up. Icing is ineffective according to the statistics, so the time-out may give the team a chance at a "Hail Mary" pass and could lead to the difference in losing or winning the game. Yet, if the kick is taken in the last seconds of the game a coach may consider icing the kicker in order to please the fan's superstition. It is important for a coach to consider feeding the fan's superstition in order to keep the support of the fans and players, as they have an impact on the outcome of the football game.

Future Research

A pressure kick occurs from various angles depending on the location of the ball and the distance of the kick. The angle of the kick may have a larger affect on the outcome of a pressure kick than the distance. This research study was unable to take into consideration the angle of the kick because the archival data did not provide this information. A future research study may attempt to understand the effect of the angle of the kick on the outcome of a pressure kick, as some kickers prefer kicking from the right and others from the left. Another factor that can have a large impact on the outcome of a game-winning kick is fan noise. Researching how noise levels play into the outcome of a pressure kick attempt or how the fans can affect the game of football can lead to an understanding of the importance of a supportive crowd.

The variables tested in the study only explain some of the variance (Nagelkerke $R^2 = 55\%$), leaving part of the variance to possibly be explained by the psychological factors, such as explicit monitoring, coping, and anxiety. Future research may look deeper into the psychological aspect of a pressure kick and how the outcome of a pressure kick varies due to the individual's mental state. The cognitive state of an individual is affected by many different factors, which need to be explained. This information could assist a kicker in learning how to cope or how his cognitive state is affecting his kicking ability.

Conclusion

This study relies on various assumptions that may be interpreted incorrectly due to a limited amount of data. Due to the lack of information provided, the researcher assumes that a missed field goal attempt is strictly the outcome produced by a kicker, but does not consider if a bad snap occurred or if the ball holder incorrectly placed the football. Secondly, the research lacks the data on the specific angle of a field goal attempt and how it influences the outcome of a field goal. In addition, the average seven extra yards for a snap should be considered in controlling for the length of the kick variable. A shorter or longer snap may influence accuracy of a kick based on the actual yard line an individual kicks the ball from. Lastly, the researcher makes the assumption that a kicker was iced if the opposing team called a timeout before the pressure kick. An opposing team may call a time-out to stop the clock or prepare the defense without the intention to ice a kicker. Due to the lack of data, these limitations may lead to a skewed outcome in the data.

Overall, this research provided insight into the effectiveness of icing the kicker and led to the determination that icing the kicker is ineffective and is not a significant predictor for the outcome of a pressure kick. The research found two variables, the kicker's ability to kick from a given distance and if the team was ranked in the top 25, to be "best predictors" of the outcome of a pressure kick. These variables show that the team's ability level and the kicker's ability levels are necessary in determining the outcome of a pressure kick. Therefore, a coach should

consider the team's ability level and the kicker's ability level from various distances, when deciding on how to use a timeout at the end of the game and how to defend a potential game-winning kick.

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CHAPTER FIVE

CONCLUSION

The findings of the current study added to the knowledge of a pressure kick and how various factors may affect the outcome of a pressure kick attempt. First, the study shows that icing a kicker is statistically ineffective. The data lead to the conclusion that icing a kicker will not aid in predicting the outcome of a pressure kick in Division-I college football. Therefore, a coach may choose to use his time-out in the last minute of the game to prepare his defensive players instead of icing the kicker as a defensive tactic. These findings may assist a coach in explaining to the public his reason for not using a time-out to ice the kicker. Most fans and the public believe that icing is an effective tactic, yet the statistics lead one to believe otherwise.

Although this study found icing to be ineffective, the study did provide evidence that two variables may affect the outcome of a pressure kick. The ranking of a team in the top 25 and the kicker's ability to kick from a given distance may affect a pressure kick. According to the data set, the two factors predicted whether the kicker would successfully make a pressure kick attempt 9 out of 10 times. The two variables were the strongest predictors of success or failure during a pressure kick, of the ten variables tested. Therefore, as a team and field goal kicker become more confident and play at a higher level, the chance of success in a game-winning pressure kick situation should increase.

The study determined that eight percent of games end in a pressure kick

situation, which allows a team the opportunity to gain one additional win in a season, if the kicker can successfully make a field goal attempt. As a result, a coach may decide to invest in a kicker by recruiting someone with a higher kicking ability and a larger kicking range. An elite field goal kicker can be classified as a kicker who makes 90 to 95 percent of the field goal attempts taken in practice, and 70 to 80 percent of field goal attempts taken during a game (Hurley, 2006). As a field goal kicker's kicking range increases, the likelihood that he will successfully make a pressure kick attempt increases. Along with this increase, the likelihood for the opposing team to keep the kicker out of his kicking range decreases. Thus, the longer distance a kicker has the ability to consistently make field goal attempts from, the better chance a team has to win during a game-winning situation, as the offense has a shorter distance they need to move the ball in order for the pressure kick to occur in the kicker's kicking range. This allows the team more time to perform a smaller task in order to win the game.

In this study, some of the variance is explained by the kicker's ability to kick from a given field goal distance and the team's ranking (Nagelkerke $R^2 = 55\%$). This research supports the idea that some portion of the performance of a field goal kicker may be a result of past performance, as those who have a higher field goal percentage may have mastered the task of kicking from the given distance. On the other hand, those with a lower field goal percentage may have not mastered the task, or kicking from the given distance. Individuals may possess different skills that are in part affected by the repeated failures or repeated successes (Uziel, 2007).

However, the variance is only partially explained and it may be that the unexplained variance is in part due to the psychological components that may affect the kicker's performance.

Although the results provide insight into two variables affecting the outcome of a pressure kick, the data only explains some variables that influence the outcome of a pressure kick. In this high-pressure environment, multiple factors are said to change the outcome, but not all factors are external or easily seen. For example, there are psychological factors, such as explicit monitoring, coping, and anxiety. The research suggests that pressure and anxiety have an effect on performance. Anxiety takes an individual's attention away from the task causing the individual to worry about performance failure, which ultimately leads to impaired performance (Oudejans, Kuijpers, Kooijman & Bakker, 2011). The tactic of icing the kicker is used to affect the psychological mindset of a player by "getting in" the opposing kicker's head. Although, the literature suggests the psychological mindset of a player can affect the outcome, icing the kicker may not be the best tactic to use as a distraction from the task. Statistically, icing the kicker does not affect the outcome of a pressure kick. Therefore, individual's anxiety levels or ability to deal with the pressure may better explain successful or failed performance.

In order to deal with high-pressure situations, elite athletes use coping mechanisms to decrease the effects of anxiety allowing them to perform at an optimal level. An athlete that utilizes coping mechanisms is able to deal with pressure and overcome the anxiety of a high-pressure situation, which often results

in optimal performance (Anshel, Williams & Williams, 2000; Elkington, 2010; Otten, 2009). Future research should study how psychological factors, such as anxiety, play a role in the outcome of a pressure kick and why icing the kicker was found to be effective in the NFL, but not in NCAA Division-I college football. Also, a future study may look to determine if coping strategies are effective during a game-winning situation, by leading to successful pressure kick attempts. The psychological factors are believed to be influential factors in determining the outcome of a pressure kick. Therefore, a coach may find research on the effectiveness of coping strategies to be beneficial.

Limitations

This study relies on various assumptions that may be interpreted incorrectly due to a limited amount of data. Due to the lack of information provided, the researcher assumes that a missed field goal attempt is strictly the outcome produced by a kicker, but does not consider if a bad snap occurred or the ball holder incorrectly placed the football. Secondly, the research lacks the data on the specific angle of a field goal attempt and how it influences the outcome of a field goal attempt. Lastly, the researcher makes the assumption that a kicker was iced if the opposing team called a timeout before the pressure kick. An opposing team may call a time-out to stop the clock in order to prepare the defense without the intention to ice a kicker. Due to the lack of data, these limitations may lead to a skewed outcome in the data.

APPENDICES

Appendix A

Data Codebook

Column Label	Question	Row Codes
Code	Date of Game	Month/Day/Year
Q1	What week was the game played?	1=Week 1 2=Week 2 3=Week 3 4=Week 4 5=Week 5 6=Week 6 7=Week 7 8=Week 8 9=Week 9 10=Week 10 11=Week 11 12=Week 12 13= Week 13 14=Week 14 15=Conference Championship 16=Bowl Game 17= BCS Bowl Game 18= National Championship
Q2	Was the kicking team ranked in the top 25?	1=No 2=Yes
Q3	If yes, what was the ranking?	Write ranking 1-25
Q4	Was the opposing team ranked in the top 25?	1=No 2=Yes
Q5	If yes, what was the ranking?	Write ranking 1-25
Q6	Did the kicker make the field goal attempt?	1=Missed 2=Made 3=Blocked
Q7	What was the kicker's overall kicking percentage for the season?	Write kicking percentage (Zero-100)
Q8	Was the kicker's team home, away, or at a neutral site?	1=Home 2=Away 3=Neutral Site
Q9	What was the difference in the total score?	0=tied 1=1 point 2=2 points 3=3 points
Q10	Did the pressure kick occur during regulation?	1=No 2=Yes

Q11	If yes, what was the time on the clock?	Write time on clock (0-60 seconds)
Q12	Was the game in overtime?	1=No 2=Yes
Q13	If yes, what overtime did the pressure kick occur during?	1=1 st Overtime 2=2 nd Overtime 3=3 rd Overtime 4=4 th Overtime
Q14	What conference is the kicking team?	1=The Southeastern (SEC) 2=Atlantic Coast Conference (ACC) 3=Big 10 4=Big 12 5=Big East 6=Pacific-12 (Pac-12) 7= Non BCS Team
Q15	What conference is the opposing team?	Same as above
Q16	What was the exact field goal distance?	Write number of yards (Zero-100)
Q17	What was the distance of the field goal?	1=1-19 2=20-29 3=30-39 4=40-49 5=50+
Q18	What was the kicker's kicking percentage from the field goal distance?	Write percentage (Zero-100)
Q19	Was the kicker iced?	1=No 2=Yes
Q20	Did kicking team call a timeout prior to the kick?	1=No 2=Yes
Q21	What was the kicking teams winning percentage for the season?	Write percentage (Zero-100)
Q22	What was the home team's home winning percentage for the season?	Same as above
Q23	What was the away team' away winning percentage for the season?	Same as above
Q24	How many field goal attempts did the kicker MISS during the game prior to the pressure kick?	Write number of missed field goals
Q25	How many field goal attempts did the kicker MAKE during the game prior to the pressure kick?	Write number of made field goals

Appendix B

Article Criteria

JOURNAL OF BUSINESS AND PSYCHOLOGY SPECIAL ISSUE CALL FOR PROPOSALS

Box Scores and Bottom Lines: Sports Data Can Inform Research and Practice in Organizations

Guest Editors:

William A. Gentry, Brian J. Hoffman, & Brian D. Lyons

The fields of organizations and sports have borrowed from one another in many respects. One popular example of the latter borrowing from the former was made famous in the book and movie, *Moneyball* (Lewis, 2003). Sabermetrics, big data, analytics, and statistics were used in baseball players' selection and development, topics well studied and highly relevant to organizational, business, and management scholars and practitioners. However, organizations have yet to fully integrate lessons and findings in the sports field to inform its own research and practice.

Recently, Day, Gordon, and Fink (2012) organized and reviewed studies from the management literature and proposed that there is much to be gained by seeking to understand organizations through the lens of sports. For instance, the contextual similarities between organizations and sports offer a variety of benefits when sports are applied to the study of work and organizations. For example, teams, whether on the field or in the boardroom, are goal-oriented and performance-driven entities (e.g., Katz, 2001). Similarly, players and employees alike report to supervisors/managers, establish formal and informal status hierarchies, must collaborate effectively, and are evaluated and compensated based on their perceived contributions to success. Furthermore, sports data is both objective and readily available, which can afford organizational scholars and practitioners valuable opportunities to generalize findings and practices from sports into businesses and organizations. Recent academic literature has contributed to this trend, publishing papers using sports data (e.g., Avery, Tonidandel, & Phillips, 2008; Barnes, Reb, & Ang, 2012; Ertug & Castellucci, 2013; Humphrey, Morgeson, & Mannor, 2009; Hunter, Cushenbery, Thoroughgood, & Ligon, 2011; Resick, Whitman, Weingarden, & Hiller, 2009). In spite of this, organizational scholars have been somewhat slow to adopt sports data in its research, and limited formal consideration has been given to the intersection between sports data and organizational research and practice. This special issue proposes that, in light of the myriad commonalities between sports and organizational settings, the lack of formal integration is a missed opportunity for scholars and practitioners in the fields of industrial-organizational psychology,

business, and management.

This special issue invites submissions that explore how sports data can influence organizations. Although empirical submissions are preferred, exemplary theoretical, conceptual, or narrative review papers will also be considered. We would also welcome inductive and deductive research, as well as null results research. Submission can include samples of recreational, amateur, and professional athletes and coaches. Submissions might also employ a two-study approach that seeks to generalize the findings from sports settings into organizational settings. The successful submission must provide clear and novel insights of relevance to organizations. Thus, authors should clearly articulate the novel contribution of their study and the implications for organizations. Proposals might include but are not limited to the following:

- Selection, promotion, and careers of athletes and coaches;
- Predictors of athlete, team, or coach performance and success;
- Judgment and decision making of officials/judges;
- Deviant behavior in athletic contexts;
- Team or staff composition and team effectiveness; and
- Coach/manager/leader effectiveness

Proposals should consist of no more than two double-spaced pages (note: title page, references, tables, and figures, do not count towards the two page limit but should be used judiciously). Proposals can be for work that is unfinished at the time of the proposal due date, but would be completed by the date that first drafts of full papers are due. The special issue editors will review proposals to ensure that the focus of the proposal is appropriate for the special issue, but developmental feedback will not be given to proposals. Authors of approved proposals will be invited to submit full-length papers for publication consideration. Full papers will be regular length manuscripts in APA style. These papers will undergo the usual double blind, developmental review process. The final acceptance of invited papers will be contingent upon incorporating editors' and reviewers' feedback.

Due to editorial constraints, authors must adhere to the following deadlines:

- December 31, 2014: Proposals due to Dr. William Gentry <gentryb@ccl.org>;
- January 29, 2015: Authors notified of proposal decisions; and
- September 1, 2015: If proposal is approved, first draft of regular length manuscript in APA style due

The corresponding author should register in the system, and then submit the manuscript on behalf of all the authors of the manuscript. Please make sure that

when submitting to the system, authors select the article type for the special issue on Sports Data and Organizations.

We have an impressive, international, editorial board to review papers specifically for this special issue. They come from highly acclaimed academic and practitioner backgrounds. They have published in top-tier journals and have experience serving on editorial boards of top-tier journals.

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Questions concerning acceptable topics or clarifications around this special issue could be directed to any of the three special issue guest editors:

Dr. William A. Gentry, Center for Creative Leadership: gentryb@ccl.org

Dr. Brian J. Hoffman, The University of Georgia: hoffmanb@uga.edu

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