Aggressive and Assertive Behaviors of Elite Rugby Players

by

Nicholas. J. Brown

B. Ph.Ed. (Honors), University of Otago, 1997

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

MASTER OF ARTS

in the School of Physical Education

We accept this thesis as conforming to the required standard

[redacted]

Dr. B.L. Howe, Supervisor (Department of Education)

[redacted]

Dr. H.D. Turkington (Department of Education)

[redacted]

Dr. J.C.H. Jones (Department of Economics)

[redacted]

Dr. T.J.Riecken, External Examiner (Department of Education)

University of Victoria.

Supervisor: Dr. Bruce L. Howe

ABSTRACT

The purpose of this study was to examine the relationship between assertive and aggressive behaviors and performance in elite international rugby. Hostile and instrumental aggressive and assertive acts were examined in relation to performance, competitive level, competition stage, timing of aggression, field position and points differential between teams. The data sample consisted of teams competing in the 1999 Rugby World Cup tournament in Wales. Teams examined were the top four teams at the end of the tournament (classified as successful) and the five teams which failed to win a match in the tournament (classified as unsuccessful). Hostile and instrumental aggressive and assertive behaviors were coded on the basis of an extensive observation schedule of the players in each of the matches. All games were recorded on videotape so they could be observed accurately and objectively. A series of one way analyses of variance were conducted on the data comparing assertive and hostile and instrumental aggressive acts, with field position, time in the game, stage in the tournament, and teams (successful or unsuccessful). Where ANOVAS found significant differences between conditions post-hoc t tests were conducted. Findings indicated that hostile and instrumental aggressive behaviour was not related to performance for teams competing at the 1999 Rugby World Cup Tournament. Aggressive behaviour was also found to be unrelated to the stage of the tournament that teams were competing in, or the period of the game. No differences were found in the levels of hostile and instrumental aggressive behaviour between successful and unsuccessful teams. Analysis of aggressive behaviour, point's differential, and field position indicated that most acts of aggression occurred in the neutral zone of the field and when scores were close. Assertive play was positively related to performance, competitive level, and stage of the tournament. The results are discussed in relation to previous findings and implications for coaches discussed.

Examiners:

[redacted]

Dr. B.L. Howe, Supervisor (Department of Education)

[redacted]

Dr. H.D. Turkington (Department of Education)

[redacted]

Dr. J.C.H. Jones (Department of Economics)

[redacted]

Dr. T. J. Riecken, External Examiner (Department of Education)

TABLE OF CONTENTS

TABLES

FIGURES

ACKNOWLEDGMENTS

I would like to thank my supervisor Dr. Bruce Howe for all his help, advice and support during my time at the University of Victoria. Thanks Bruce for everything. I would also like to thank the other members of my committee, Drs. Dave Turkington and Colin Jones for their interest and assistance.

I would also like to thank Don Lobb for his help in supplying videotapes of the matches. I would also like to offer special thanks to Doug Tate, Rick Farrally, and the coaches and players of the University of Victoria Rugby Club who helped make this study and my time here a great experience.

Thanks to my fellow classmates, friends, and roommates, especially Sean, Will, Hank, Trevor, Kelly, Fiona, and Jonesy for keeping things out there and interesting. Thanks to Gladys and Norma for constantly keeping me on my toes. Thanks must go to John Labatt and the staff at Axis Caberet for providing an opportunity to unwind after a stressful day hitting the books. Finally a special thanks to Dr. Alex McKenzie for helping to get me started in all these shenanigans.

DEDICATION

To my family, you're the best.

CHAPTER I

INTRODUCTION

Aggressive acts are present in most sporting situations today, not only by players but also by coaches and fans. In activities such as the contact sports of ice hockey and rugby, aggression is described as a necessary factor in performance and is frequently encouraged. In these sports, players are described as aggressive when they demonstrate violent outburst (such as punching an opponent) and also if they play vigorously in a close match that are within the rules and spirit of the game. These latter behaviors have been described as assertive and are believed to benefit performance more directly.

Sport psychologists have been concerned about the use of aggressive behavior in sport and have mainly viewed this aggression as being negative, and morally unacceptable (Smith, 1983). Researchers have examined the relationship of aggressive behavior to performance (McCarthy and Kelly, 1978; Coulomb and Pfister, 1998). This existing research is limited and weakly supports the notion that aggression may create anger and arousal that may interfere with player concentration and possibly decrease performance (Cox, 1998). However, this is not generally the position of coaches and players of contact sports who believe a positive relationship exists between performance and aggression.

The research has tended to produce equivocal results likely to result from the lack of a common understanding of what is considered to be aggression. Problems arise because the distinction between acts that are violent and non-violent is unclear. For example, similar acts are frequently interpreted differently among participants and observers.

Aggressive behavior, according to Husman & Silva (1984) is "...an overt verbal or physical act that can psychologically or physically injure another person or oneself" (p. 247). Aggression can be further defined in relation to the nature of the primary reinforcement received from performing the act. Silva (1980) described this distinction by using the terms Hostile Aggression and Instrumental Aggression.

Hostile Aggression refers to an observable act that is intended to inflict physical or psychological harm on another person or oneself and is outside the rules of the sport. It usually involves anger and has harm or injury to an opponent as its primary goal (Silva, 1980). Instrumental Aggression refers to behavior committed to achieve a goal perceived by a player to be important, but still involves an intent to inflict harm and is also outside the rules of the sport (Silva, 1980).

Other behaviors which are often described as aggressive do not meet these criteria but rather are vigorous and within the rules of the sport. These behaviors have been termed as assertive. Silva (1980) defined such behavior as "...the use of high degrees of physical or verbal force or the demonstration of unusual physical energy and effort" (p. 180). Assertive behaviors differ from aggressive responses in two ways. First, the intent of the assertive behavior is to achieve a goal and not to inflict injury. Second, the assertive behavior falls within the rules of the game. This definition allows forceful acts like tackling, blocking, and checking in sports such as football and ice hockey to be described as assertive rather than aggressive.

Among the studies that have been carried out, none have actually examined the distinction between aggressive and assertive behavior. Examples of the work include McCarthy and Kelly (1978) who found a positive correlation between aggressive behavior

(penalty minutes) and assists and goals scored in ice hockey. Conversely, Wankle (1973) found no difference in the aggressive penalties of winning and losing teams in university hockey matches. Sachs (1978) found that hostile or instrumental aggression was not related to performance in women's softball. Widmeyer and Birch (1984) in a study across four seasons in the NHL found no significant relationship between team aggression and team performance outcome. In their study no differentiation was made between hostile and instrumental aggressive behaviors. A significant relationship did exist though between aggression and performance outcome in the first period of play (a positive relationship) and the third period of play (a negative relationship). These results indicated that aggression, if used early in a match, was found to be an effective means to success.

In one of the few recent studies in the area, Coulomb and Pfister (1998) examined the relationship between competitive level and time on aggression during the course of play in soccer. Results indicated that hostile aggression was more prevalent during the second period of matches compared to the first and that instrumental aggression exhibited an opposite relationship (i.e. greater during the first half, and less in the second). Teams competing at higher levels were found to exhibit greater frequencies of instrumental aggression and lower frequencies of hostile aggression than lower level teams. The authors suggested that hostile aggression was less prevalent at higher competitive levels because the players were more experienced and exercised restraint in their actions. Instrumental aggression was more frequent, as "...cognitive processes are involved, and the players learn to use instrumental aggression at the right time and place..."(p. 229) in order to improve their chances of winning.

The occurrence of the 1999 Rugby World Cup with complete television coverage of matches has made it possible to study the performance of selected national teams. Direct observation based on this coverage has permitted distinctions to be made among assertive, hostile aggressive and instrumental aggressive acts occurring during matches. Few studies (Reid, 1979; Hasegawa, 1994) have examined aggression in the sport of Rugby Union, and none have examined rugby at the elite international level. In addition no previous studies have considered assertive behaviors in the analysis. As noted earlier coaches and players in contact sports have generally proposed that a team/player must display a high level of aggression in order to perform at their best.

Purpose of the Study

The purpose of this study was to examine the relationship between assertive and aggressive behaviors and performance in elite international rugby. Specifically, hostile and instrumental aggressive and assertive acts were examined in relation to performance (win or loss), competitive level (top four finishers versus pool play losers), competition stage (pool play versus finals), timing of aggression (1^{st} or 2^{nd} half), field position (offensive or defensive position) and points differential between teams.

Research Questions

1. Do successful teams (top four finishers) demonstrate higher levels of assertive and instrumental aggressive and lower levels of hostile aggressive behaviors; compared to lower level teams (bottom four teams)?

2. Do successful teams as they move from pool play to final matches increase the levels of assertive behavior, instrumental aggressive behavior, and hostile aggressive behavior?
3. Is assertive and hostile and instrumental aggressive behavior positively related to successful performance?
4. Do patterns of hostile aggression, instrumental aggression, or assertive acts differ during periods of the first or second half of a match?
5. Do teams exhibit higher levels of instrumental or hostile aggression when they are within their offensive or defensive zones (inside their own 22m line or their opponents 22m line) compared to the neutral zones of the field (between the two 22m lines)?
6. As the margin between the teams' scores increases, do teams with a negative points differential (those losing) exhibit higher levels of hostile aggression, compared to teams with a positive points differential?

Key Terms

Aggression. An overt verbal or physical act that can psychologically or physically injure another person or oneself.

Assertive Behavior. High degree of physical or verbal force or the demonstration of unusual physical energy and effort that occurs during matches and is within the laws of the game.

Hostile Aggression. Aggressive acts that are judged to be performed specifically for the purpose of inflicting pain or injury on an opposing player and are outside the rules of the game (e.g. using the fingers to gouge the eyes of an opponent in an attempt to injure).

Instrumental Aggression. Aggressive acts that are judged to be performed in an effort to achieve a goal that is not related specifically to inflicting pain or injury on a specific opponent and that are outside the rules of the game (e.g. using the elbow to obstruct an opponent from getting the ball).

CHAPTER II

REVIEW OF LITERATURE

In this review of literature, aggression and assertiveness are defined, and the general theories and concepts regarding these terms are examined. A review of past research concerning aggression and performance follows.

Aggression

Aggressive behavior has been defined in a number of ways, dependent upon the context in which it is discussed. Baron (1977) suggests that "...aggression is any form of behavior directed toward the goal of harming or injuring another living being who is motivated to avoid such treatment." (p.7).

This definition includes several key points. First, aggression is behavior, and therefore cannot describe attitudes, emotion, or thoughts. Thinking about hurting an individual does not constitute an aggressive act. Second, aggression is directed or intentional behavior, and therefore cannot be accidental in nature; that is there is intent on behalf of the aggressor to cause injury. Third, this may include verbal abuse, which is said to cause psychological injury. Fourth, according to Baron, aggression involves living beings. To kick a wall or throw a racquet is not aggressive, but to hit someone else is deemed to be an aggressive act. Finally, the last point is that the victims of the aggression are motivated to avoid such treatment. This point may seem redundant, but is included to exclude those individuals who act in a suicidal or sadomasochistic manner.

Berkowitz (1993) went further to suggest that for an act to be considered aggressive there must be a reasonable expectation that the aggressive act will be successful in causing harm or pain.

Instrumental Aggression

Aggression acts are further defined based upon the primary reinforcement derived from performing the act. Instrumental aggression describes "...aggressive acts, which are performed in order to receive a non-aggressive goal" (Husman & Silva, 1984, p.248). This type of aggressive act has a tangible reward such as victory, or praise as its reinforcer. Instrumental aggression is viewed as a means to an end, with the aggressor willing to inflict pain or injury to receive a non-aggressive goal. It must be remembered that even though inflicting pain is not the ultimate goal of the behavior, the act is still unacceptable and outside the rules of the sport (e.g. a player injures an opponent in an illegal early tackle in order to stop a try being scored. The goal of the act was to stop the opposing team from scoring, but the tackle was still outside the rules of the game).

Hostile aggression

Hostile aggression occurs when the "...primary reinforcement for committing the act of aggression is seeing the pain or injury inflicted on the target" (Husman & Silva, 1984, p.248). This aggression according to Berkowitz (1965) is also called angry aggression, because the aggressor is often perturbed with his or her victim. The intent is to make the

person suffer, and seeing the victim in pain rewards the offender. The thought of winning the match or achieving other goals is not present in the offender's mind during the behavior.

Assertive Behavior

Assertive behavior is a term used to define acts, which may appear to be aggressive in nature, but because they occur within the rules of the sport, are considered fair play. Often the line between aggression and assertive behavior is difficult to determine. Silva (1980) defined assertive behavior as "...the use of high degrees of physical or verbal force or the demonstration of unusual physical energy and effort" (p. 180). Assertive behaviors differ from aggressive responses in two ways. First, the intent of the assertive behavior is to achieve a goal and not to inflict injury. Second, the assertive behavior falls within the rules of the game. This definition allows for forceful acts such as tackling, blocking, and checking in sports such as football and ice hockey to be described as assertive rather than aggressive as they otherwise may have been viewed. As Cox (1998) states "...if an opponent is harmed as a result of a tackle in soccer, it is not necessarily aggression. It is merely assertive play, as long as it is within the spirit of the agreed-on rules and the intent to harm is not present"(p.279).

In sporting situations there is obviously room for confusion between what is deemed to be hostile aggression, instrumental aggression, or assertiveness, due mainly to the fact that only the athlete involved knows for certain if there was intention to harm the victim.

Overview of Aggressive Behavior Research

A large number of studies have been conducted examining aggressive behavior in the sporting context. Although the results have been equivocal, the view of sport psychologists has been that aggressive behavior is negative, morally unacceptable, and may lead to decreased performance (Smith, 1983; Jones, Ferguson, & Stewart, 1993). The majority of these studies have found inconsistent results due to differences in definitions of aggression and various methodological approaches such as using archival data, self-report instruments, or direct observation.

Theories of Aggression

There have been several theories proposed to explain the phenomenon of human aggression. The majority of these theories can fall into one of four categories: catharsis theory, instinct theory, frustration-aggression theory, and social learning theory.

The Catharsis Effect

The vicarious aggression catharsis theory of aggression states that aggressive behavior releases pent up energy and frustration that leads to reduced tension, and therefore decreases the possibility of further aggressive responses. As a result of this decreased tension the individual feels better (Cox, 1998; Smith, 1975; Smith, 1983). The sporting environment

has generally be viewed as a socially acceptable environment for such behaviors to take place, as it is believed that it is better to release this energy on the playing field, rather than in the home, at work, or in public. Although the sporting context may provide a suitable environment for this cathartic release of energy it must be remembered that the act is still aggressive and therefore inappropriate and unacceptable.

The cathartic theory also suggests that viewing images of violent behavior should serve to release similar urges present in individuals, and therefore reduce the possibility of potentially aggressive behavior. Smith (1983) dismissed this notion stating that the idea that "...watching hockey players fight drains off feelings of aggressiveness in the watcher is as illogical as arguing that watching someone eat a sumptuous meal drains off feelings of hunger"(p.126).

Instinct Theories

Instinct theory of aggression is associated with the work of Sigmund Freud, and proposes that aggressiveness is an innate characteristic of all animals (Gill, 1986). According to instinct theory, all humans are born with an aggressive instinct, and this makes aggressive behavior inevitable. Lorenz (1966) proposed that this aggressive instinct is a "fighting" instinct that has resulted from evolution. According to Lorenz, this fighting instinct continues to generate aggressive feelings, and these must be released at some point or else a violent destructive outburst will occur. Lorenz proposed that in order to avoid this violent outburst, aggressive energies should be released in less destructive ways (sport), and suggested that the

main function of sport was to act as a healthy safety valve for the cathartic discharge of aggressive urges.

The instinct theory does offer justification for the phenomenon of aggression, but is generally not accepted. The theory predicts that all humans contain this aggressive instinct, and therefore should all express them in the same manner, cross-cultural comparisons suggest that this is not true. Similarly, those cultures with the most non-destructive outlets for aggression, should also tend to be less warlike, which anthropological research has shown to be untrue (Gill, 1986).

Most researchers dismiss the instinct theory, and suggest that reasoning plays an important role in behavior selection. Berkowitz (1973) stated that aggressive behavior is in fact the function of a "...complex interplay between innate propensities and learned responses" (p. 321).

The Frustration-Aggression Theory

Dollard, Doob, Miller, Mowrer, and Sears (1939) proposed the frustration-aggression theory for aggressive behavior. The theory simply suggests that aggression results from frustration, and that a cathartic effect operated if the aggressive behavior successfully reduced the level of frustration (Husman & Silva, 1984). The model also acknowledged that punishment, or fear of punishment, resulting from aggressive behavior could lead to further frustration, and therefore increase the need to aggress. Frustration in this sense is defined as "...those circumstances that interfere with goal directed behavior."(Smith, 1975. p. 76).

The theory was reformulated by Berkowitz (1958, 1993) who took into account the fact that frustration does not necessarily result in aggressive behavior. Sargent (1948) had found frustration could lead to many emotional responses such as fear, anxiety, shame, hostility, or jealousy. Berkowitz posited that frustration creates a readiness or physiological arousal for aggression, and that this readiness or arousal must be combined with certain stimuli that act as triggers to facilitate the aggressive response. He suggested the interpretation of these stimuli was a learned process and affected by factors such as modeling and reinforcement.

In the sporting environment, a high arousal level could result from frustration associated with trying to win a match (and overcome the constant attempts of the opposition to deny the goal of victory) coupled with frustration associated with the avoidance of defeat (failure to achieve the goal). In these situations, stimuli such as foul play or a controversial call from the match officials could, depending on the individuals past experiences and perception of the event, trigger an aggressive behavior. The individual may choose to refrain from acting aggressively because s/he knows of the consequences of the action or they may lash out, unconcerned with any punitive actions that may follow.

It has been stated by Gill (1986) that "...frustration does not cause aggression, but instead induces an instigation toward aggression known as aggressive drive. That aggressive drive in turn facilitates aggressive behavior."(p.198). The frustration aggression theory suggests this is true, but that the final decision on whether to act aggressively is a conscious one, made by the individual based upon their previous experiences. Frustration does not necessarily cause aggression, it merely creates a climate for it, and ultimately the individual decides whether or not to aggress, based upon socially learned values.

The Social Learning Theory

Social learning theory evolved from research suggesting the relationship between frustration and aggression was not necessarily due to instinct or biological drive, but could be influenced by learning. This theory does not support the notion of a cathartic effect occurring during an aggressive behavior. The basic assumption of the social learning theory is that aggression is a behavior that is learned in a social setting. These behaviors are learned through the processes of either direct reinforcement, or through observational learning. Examples of reinforcement and observational learning are vast in the sporting environment, and range from the cheering of the crowd in response to an aggressive play, praise from a coach or parent, or simply watching professional players on the television. All serve to reinforce the aggressive behavior (Smith, 1983).

Unlike the instinct or drive theories, the social learning theory does not suggest there is a constant aggressive drive operating within us. Instead, the theory suggests that aggressive behavior is learned through reinforcement, and modeling and that aggression results only from situations that elicit or facilitate aggressive behaviors.

Smith (1975) defined aggressive behavior as a "...function of reinforcement, imitation, cue similarity, and perception" (p. 77). Smith stated that aggressive habits are largely due to the direct reinforcement of aggressive behavior. This suggests that if an aggressive behavior is successful in removing the cause of frustration, then it is likely the individual will use the same behavior if that situation arises again. Perception of the severity of the punishment acts as an inhibitor of aggressive behavior. The greater the likelihood and

severity of a punishment, the less chance there is of aggression occurring. This inhibitory effect is therefore a product of learning by the individual.

Imitation refers to modeling behaviors. Studies have found that children imitate aggressive behavior modeled by adults and sports heroes and this can lead to aggressive behavior (Bandura and Walters, 1963). Goranson (1972) supported this and suggested that the level of cue similarity between the observed model and real life determined the possibility of imitation. Also if the models behavior was rewarded (in the form of fan appreciation or prestige associated with committing the aggressive act), then there was a greater chance of imitation.

One positive of the social learning theory is that it does not suggest that aggression is inevitable, but states that it is learned and therefore can be directed and controlled (Gill, 1986; Husman and Silva, 1984).

Bredemeier (1994) has proposed a refinement of social learning theory based on cognitive development. This theory suggests that individuals will choose to aggress or not to aggress based upon their stage of ethical and moral development. Bredemeier contends that as the general population views aggressive behavior as unethical, then the decision to act aggressively involves a form of ethical dilemma on behalf of the individual. The final decision is therefore dependent on the player's ability to distinguish what is and is not morally acceptable to them and society, based upon socially learnt values. In sporting situations, Bredemeier suggests there is a suspension of morality, whereby "everyday" morality is put on hold and new morals are used during competitive situations. She referred to this suspension as "bracketed morality".

Aggression Research

Measurement of Aggression

The majority of research concerning aggression and sports violence has been inconsistent and conflicting. The bulk of these inconsistencies may be attributed to theoretical and methodological differences. The many different definitions of aggression used by previous researchers, combined with differences in assessment make comparison of results difficult if not impossible. Examples of such definitions of aggression include

"...fighting, and the act of initiating an attack." (Scott, 1968)

"... behavior aimed at causing harm or pain." (Aronson, 1972)

"...any behavior designed to injure another person, psychologically or physically." (Smith, 1983).

These definitions determine what behaviors are classified as aggressive and difficulties arise when ambiguity occurs. For example, verbal abuse towards an opponent would be considered aggressive by Smith (1983) but not by Scott (1968).

The majority of research on aggressive behavior in sport has used archival data, based on match reports, often involving an entire season, or several seasons of play (McCarthy and Kelly, 1978; Widmeyer and McGuire, 1997; Wankle, 1973.) The benefit of these measures is that they allow for large amounts of data to be examined. Disadvantages of archival studies are that they only include acts seen and punished by the match officials and make no distinction between instrumental and hostile aggression (Coulomb and Pfister, 1998).

Aggression has been also considered as a personality trait using pencil and paper questionnaires such as the "Aggression Questionnaire" (Buss and Perry, 1992), the "Aggression Inventory" (Gladue, 1991), and the "Athletic Aggression Inventory" (Bredemeier, 1978). These instruments all assess aggression as a trait and therefore are not suitable for examining acts of aggression occurring in competition, which are the result of a combination of trait and state or environmental factors.

Coulomb and Pfister (1998) defined aggression as the "intention to harm another person" (p.223). This definition introduces another dilemma for researchers, that of the ability to measure intent. Intention on behalf of the individual to harm another is a key concept in defining aggressive behavior. In the sporting context an injury resulting from a tackle in rugby could be defined as aggressive if the intent of the tackler was to harm the opponent. If the intent to injure was not present in the individual and the injury results from a legitimate tackle, then the act is described as assertive.

As pencil and paper questionnaires are unable to measure this intent to injure, it has been suggested that direct observation is the only suitable measurement technique (Coulomb and Pfister, 1998; Cox, 1998). Direct observation has been used in several studies (Harrell, 1980; Worrel and Harris, 1986) but no distinction has been made between hostile aggression, instrumental aggression, and assertive behavior.

Aggression and Performance

The general view of sport psychologists and a large number of the general public is that aggressive behavior in sport is morally unacceptable and should be eliminated. When

considering the relationship between aggression and performance, there are several factors to consider. On an individual basis, aggressive behavior, according to the cathartic theory, may result in decreased tension, which possibly could lead to improved performance. Similarly the heightened physiological arousal associated with aggressive behavior has the potential to either be beneficial or detrimental to performance, based on the individuals interpretation of this arousal.

In the team sport context, aggressive behavior can act as a double-edged sword. Aggressive behavior may cause a disruption to the thoughts and actions of team-mates, and if the act is punished by officials, can result in a disruption in play (affecting the focus and attention of team-mates), possible punitive action (receiving a penalty or being scored against), or having to play with one less player if the offender is sent off. Conversely, aggression can act as a rally call for teams. A bench clearing brawl involving all the players on a team could result in increased feelings of group solidarity and cohesiveness among team-mates which could transfer to improved performance on the field (Brunelle, Janelle, and Tennant, 1999).

Research examining the relationship between performance and aggression has produced equivocal results, as outlined earlier. Studies examining aggression and winning have also produced mixed findings. McCarthy and Kelly (1978) found a positive correlation between aggressive behavior (penalty minutes) and assists and goals scored in ice hockey. Wankle (1973) found no difference in the aggressive penalties of winning and losing teams in university hockey matches. Widmeyer and Birch (1979) reported that elite all-star university hockey players were either extremely aggressive or extremely nonaggressive, whereas non all-stars were moderately aggressive. Sachs (1978) found that hostile or

instrumental aggression was not related to performance in women's softball. Volkamer (1971) in a study investigating aggression (as defined by the number of fouls) and game variables in over 1800 soccer matches, found that losers committed more fouls than winners. This result was assumed to be the result of increased frustration on the losing team.

Aggression and Competitive Level

The relationship between competitive level or experience and aggressive behavior has also been extensively studied. Though these studies have encountered the same difficulties with research methodologies as mentioned previously, the general findings have been consistent. Results indicate that as the age, experience, and competitive level of athletes increases, so to does the level of aggressive behavior they display (Smith, 1978; Kerr and Kelly, 1982; Underwood and Whitwood, 1980). Volkamer (1971) found that lower level teams aggressed more than higher ranked teams in a soccer competition, and that when lower and higher ranked teams played each other, they both committed more fouls than middle ranked teams. It was proposed that this may be due to the middle ranked teams having less to lose, as the championship was not at stake, or they were not in danger of coming last in the competition.

Reasons for the increased aggressive behavior can be explained using moral reasoning and social learning theories of aggression. Age and experience related increases in aggression might be explained by a negative influence on moral reasoning resulting from an extended exposure to the sport environment. Players involved in sport for an extended period may develop what Bredemeier described as "Bracketed morality" which describes a

suspension of everyday morality during times of athletic competition. This "game" morality may perceive aggressive acts to be morally acceptable, and therefore appropriate behavior during competition (Bredemeier, 1994).

As athletes age and increase in competitive level their attitude to sports becomes more professional (Blair, 1985). Professional in this context relates to the attitude of players becoming more 'winning' orientated and being prepared to do anything to achieve that goal. Indeed if an athlete makes it to a professional team, then the majority of their time is devoted to their sport either through training or competing. As a result, socialization processes occurring within the team culture may encourage an individual to aggress in their sport. Coulomb and Pfister (1998) argue that the more experience and excellence players acquire during training and competition, then the more likely they are to use aggressive behaviors.

It is acceptable to assume that as players become more experienced in the nuances of their sport and as the stakes of victory increase, then they will be more prepared to use instrumental aggressive behavior in an attempt to increase their chances of success.

Aggression and Time

Studies involving correlation's between aggressive behavior and time during the game have also produced equivocal results. In the sport of ice hockey, studies have examined the relationship and have found that as the match progresses, the level of aggressive behaviors increases (Kelly and McCarthy, 1979, Worrel and Harris, 1986). In these studies hostile aggressive behavior only was analyzed.

Widmeyer and Birch (1984), in a study across four seasons in the NHL, found no significant relationship between team aggression and team performance outcome. In the study no differentiation was made between hostile and instrumental aggressive behaviors. They did find significant relationships between aggression and performance outcome in the first period of play (a positive relationship) and the third period of play (a negative relationship). These results suggest that aggression if used early in a match could be an effective means to success.

Coulomb and Pfister (1998), who examined soccer, found that aggression levels differed between the halves of a match, with instrumental aggression decreasing in the second half of matches, and hostile aggression showing an opposite relationship. The authors suggested that as instrumental aggression is reasoned, goal orientated behavior, players knew when to use it effectively to improve their chance of success. Hostile aggression, viewed as an irrational and emotional response to stressful situations, was proposed to be more common at the end of matches because frustration levels were greatest at this time.

Aggression and Points Differential

Volkamer (1971) and Wankle (1973) both conducted studies which included examinations of the relationship between the margin of victory or defeat and aggression. Volkamer, using soccer teams, found that aggressive behavior was significantly related to the margin of victory, whereas Wankle found no relationship between the two in the sport of ice hockey. Volkamer (1971) found that the closer the scores, there tended to be less aggression. This was suggested to result from the possibility of one foul determining the outcome of the

game, and therefore players becoming more cautious with their actions. In games where there were large score differentials, there were fewer fouls, compared to games that had moderate points margins.

From a frustration-aggression position, a large points differential would be highly frustrating for the losing team, as it would mean its chances of goal attainment (winning) are very slim, resulting in the possibility of aggressive behavior on the field.

Aggression and Field Position

Little or no research has examined the relationship between field position and the occurrence of aggressive acts, and none specifically the sport of rugby. Again from a frustration-aggression theory standpoint, it would be acceptable to predict that aggressive acts would be more likely to occur when teams are either in their offensive or defensive zones, as opposed to the neutral zone of the field. When attacking or defending their goal line, frustration could be at its highest as the team tries to score or stop the opposition scoring, as both situations involve the opposition trying to deny the team the goal of winning (through preventing the team scoring, or by the opposition scoring themselves). This frustration combined with the close proximity of the goal line would serve to heighten emotions and possibly increase the chance of aggressive behavior occurring.

As the majority of research concerning aggression in sport is equivocal, there are no definitive answers relating to the relationship with performance. Further research, involving

standardized operational definitions and research methodologies is required to fully explore and understand this area of sport psychology.

CHAPTER III

RESEARCH METHODS

This chapter reports the research methodology and procedures used in the study. The participants, variables, limitations, assessment of hostile and instrumental aggressive and assertive acts, operational definitions, data collection procedures, observational reliability measures, and statistical analyses are presented.

Participants

The sample consisted of teams competing in the 1999 Rugby World Cup tournament in Wales. Teams examined were the top four teams at the end of the tournament (classified as Successful) and the five teams which failed to win a match in the tournament (classified as Unsuccessful). All matches played by these nine teams during the tournament were used.

Dependent Variable

The dependent variable for the study was the number of assertive and hostile and instrumental aggressive acts observed during matches for each team examined in the study.

Independent Variable

The independent variables were:

(a) The competitive level of the teams, consisting or either Successful (top four finishers) or Unsuccessful teams (teams losing all of their matches in the tournament). Established post-hoc, teams were placed in each of these groups based upon their performance at the World Cup tournament.

(b) The level of importance of the match being played, consisting of either pool play matches, or finals matches, which included the quarterfinal, semi final, consolation final, and the final matches of the tournament.

(c) The level of performance, consisting of either winning or losing the matches played.

(d) Time, consisting or either first half, second half, and overtime periods. Observed acts were classified as having occurred in these periods.

(e) Field position, consisting of either offensive zone (inside their opponents 22m line), defensive zone (inside their own 22m line) and neutral zone of the field (between the two 22m lines). The observed acts were classified as having occurred in these zones.

(f) Point's differential, consisting of the margin between the two team's scores at the time of the act. The differential was described as either positive (the team is winning) or negative (team losing) and the actual margin noted.

Limitations and Delimitation's

1. The study focused only on the sport of Rugby Union, and specifically only those elite, male teams competing at the 1999 Rugby World Cup Tournament, it is not possible to generalize the findings to females, other sports, or other competitive levels.
2. The analysis of games was limited to the recordings provided by the broadcasters televising the event, and by the accuracy of the observer in correctly identifying aggressive and assertive acts.
3. Only hostile and instrumental aggressive and assertive acts which could be seen were recorded, no verbal acts of aggression were examined due to the nature of the broadcasting of the games.
4. Timing of hostile and instrumental aggressive and assertive acts was based upon the match time provided by the broadcaster during coverage.
5. Performance results were determined by the rules governing the running of the tournament.

Assessing aggressive and assertive acts

Hostile and instrumental aggressive and assertive behaviors were coded on the basis of an extensive observation schedule of the players in each of the matches. Behaviors were divided into three major classes, assertive behaviors and aggressive behaviors. Aggressive acts were further designated as hostile and instrumental behaviors. Timing of the hostile and instrumental aggressive and assertive acts was recorded from the match time provided in the

coverage of the games, and acts were classified as having occurred in either first or second half of the match. In the event of a game going to overtime, hostile and instrumental aggressive and assertive acts occurring in overtime were classified as OVT. The score and points differential at the time of each act was noted as was the position on the field where the act occurred.

Operational Definitions

Assertive acts

Offensive Tackle. Tackle involving one or more players from the defensive side that results in the ball carrier either being stopped instantly or driven backwards.

Turnover in tackle. Tackle involving one or more players from the defensive side, that results in the ball being turned over and possession going to the defensive side.

Charge down. Defensive players using his arms, hands, or body to block the kick of an opposition player in general play.

Fend/Straight Arm. Player in possession of the ball using his arm to push off and avoid the tackle of a defensive player.

Hitting Rucks. Players from either offensive or defensive teams running into the ruck or maul situation and physically knocking players (from either team) in the direction they are playing.

Rucking. Attacking or defensive players using their feet to rake at the ball in a downward and backward motion in an attempt to free the ball from a ruck situation.

Diving for 50/50 ball. Player diving on to the ground to secure loose ball in an open field situation while in close proximity of opposition players.

Strong running/breaking tackles. Player in possession of the ball running in a determined and unhesitant manner, and running through the attempted tackle of at least one opposition player.

Jumping for High Balls. Players from either team leaving the ground in an attempt to gain possession of a ball in mid air as the result of a kick or high pass.

Aggressive acts

Charging in scrum. Illegal front row behavior where one team disregards the referees commands and initiates packing down in the scrum before the opposition team is ready.

Tripping. Defensive player using his foot or leg to trip a player who is in possessing of the ball and running in an open field situation.

Shoulder Block. Defensive player using his shoulder to make contact and attempt to knock over or impede the progress of a player in possession of the ball. This act is illegal as no attempt is made by the defensive player to use his arms to wrap the ball carrier.

Punching. Striking an opposition player either on the head or the body with a clenched fist.

Kicking opponent. Deliberate kick to the head or body of an opposition player while they are in a ruck, maul, or open field situation.

Stomping. Similar to rucking, except that the player does not attempt to perform a downward and backward raking motion. The stomp is any contact made by the foot on an

opposition player that is in a downward and forward motion, or that does not occur in close proximity to the ball, in the ruck or maul situation.

Head butt. Using the head to violently make contact on the head of an opposition.

Eye gouge. Using the fingers in an attempt to injure the eyes of an opposing player.

Testicle grab. Grabbing, pulling, and twisting of the testicles of an opponent with the hand.

Barging in Lineout. Using a shoulder block to knock opposition players out of the lineout, and to disrupt opposition jumpers while they are contesting the ball in mid air in a lineout.

High Tackle. Tackle by a defensive player that makes contact above the shoulder level of the ball carrier.

Elbowing. Using the elbow to strike an opposing player on the head or the body. Also applies to a ball carrier that uses his elbow in an attempt to fend off a player attempting to tackle him.

Spear Tackle. Tackle in which the defensive player picks the ball carrier off the ground and then drives him head first into the ground in a position where the ball carriers head is below his waist.

Illegal front row action. Any front row action penalized by the referee as a result of a law violation occurring in the front row during a scrum situation.

Biting. Using the teeth to bite an opponent's body.

Data Collection Procedures

All games were recorded on videotape so they could be observed accurately and objectively. Games were analyzed by the researcher to determine acts that fell into the classes of hostile and instrumental aggressive and assertive behaviors. Timing of hostile and instrumental aggressive and assertive acts was noted with each observation, as was the position on the field where the behavior was displayed (i.e. offensive, defensive, or neutral). The point's differential at the time of behavior, and a description of the specific act performed were also noted.

Reliability of Observations

To determine observational reliability, a trained observer and the researcher independently analyzed three halves of separate matches from the 1999 Rugby World Cup Tournament. Inter-observer agreement was established at 94.8 %.

To check for 'observer drift, the observer re-analyzed one half each of two previously coded matches, and established a rating of 92.4% for intra-observer agreement.

Statistical Analyses

Assertive and hostile and instrumental aggressive acts were coded in all games played by the teams examined. Two matches were not included in the study (one each of the successful and unsuccessful teams) due to an inability to obtain a copy of the matches. Teams were assigned as being in either the successful group (the top four teams in the tournament) or the unsuccessful group (five teams that did not win a single game in the tournament).

A series of one way analyses of variance were conducted on the data comparing assertive and hostile and instrumental aggressive acts, with field position (attacking, neutral, or defensive zones), time in the game (first half, second half, or overtime), stage in the tournament (pool, quarter final, semi final, or final matches), and teams (successful or unsuccessful). A level $p= 0.05$ was set as the acceptable level of significance for all analyses of the data. Where ANOVA found significant differences between conditions post-hoc t tests were conducted. Such results would only provide indications of relationships between variables. Assertive and hostile and instrumental aggressive acts were also coded with reference to the margin between teams' scores when they occurred (e.g. positive or negative point's differential). For this final analysis the data was graphed in order to assess patterns of behavior in relation to point's differential in a match.

CHAPTER IV

RESULTS

This chapter presents the results of the data analyses performed upon the hostile aggressive, instrumental aggressive, and assertive behaviors recorded for all teams examined in the study. The results are divided into three sets; (a) Successful teams (top four finishers), (b) Unsuccessful teams (bottom 5 teams), and (c) comparisons between the successful and unsuccessful teams. Descriptive data for each of the sets is reported first, followed by the statistical analyses performed on each data set.

Successful Teams

Descriptive Results

The hostile aggressive, instrumental aggressive and assertive behaviors recorded for the individual successful teams over all games of the tournament are presented in Table 1. Table 2 shows the means and standard deviations for pooled data over each game played by the four teams. Table 3 displays the pooled mean and standard deviation for each behavior for all games (23 in total) played by the four successful teams. Figures 1 to 3 show the hostile aggressive, instrumental aggressive, and assertive behaviors recorded for the individual teams during the tournament. Figure 4 and 5 display the means and standard deviations of scores for pooled data of all games played by all four teams.

A One-way Analysis of Variance was conducted on the mean scores for hostile aggressive, instrumental aggressive, and assertive behaviors. Results of the ANOVA

Table 1

Assertive, Hostile Aggressive, and Instrumental Aggressive act Frequencies Over all Matches Played by Successful Teams

		Game					
		1	2	3	4	5	6
Team	Behavior						
New Zealand	Assertive	180	228	133	129	174	148
	Hostile	0	1	0	4	1	4
	Instrumental	1	0	2	4	0	1
France	Assertive	136	156	110	74	146	115
	Hostile	5	2	8	4	6	11
	Instrumental	2	2	2	3	2	6
South Africa	Assertive	235	182	173	64	186	85
	Hostile	1	4	1	6	2	4
	Instrumental	1	0	3	6	1	2
Australia	Assertive	122	140	N/A	85	174	152
	Hostile	1	5	N/A	9	1	4
	Instrumental	0	2	N/A	3	1	1

Table 2

Pooled Data Over Each Game Played by Successful Teams

Behavior	N	Game 1		2		3		4		5		6	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Assertive	23	168.25	50.90	176.50	38.45	138.67	31.88	88.00	28.65	170.00	16.97	125.00	31.40
Hostile	23	1.75	2.22	3.00	1.83	3.00	4.36	5.75	2.36	2.50	2.38	5.75	3.50
Instrumental	23	1.00	0.82	1.00	1.15	2.33	0.58	4.00	1.41	1.00	0.82	2.50	2.38

Table 3

Pooled Mean and Standard Deviations for Assertive, Hostile Aggressive, and Instrumental Aggressive Acts for All Games Played by Successful Teams

Behavior	N	Mean	Standard Deviation
Assertive	23	145.48	45.26
Hostile	23	3.522	2.874
Instrumental	23	1.957	1.665

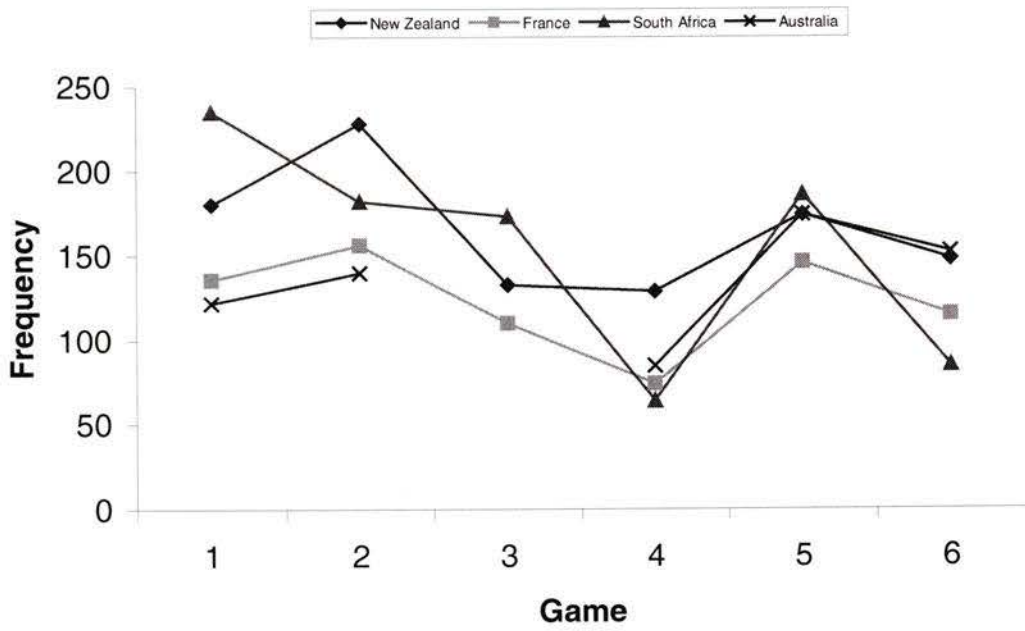

Figure 1. Assertive act frequencies over all matches played by Successful Teams.

(Note: No data for Game 3 for the Australian team.)

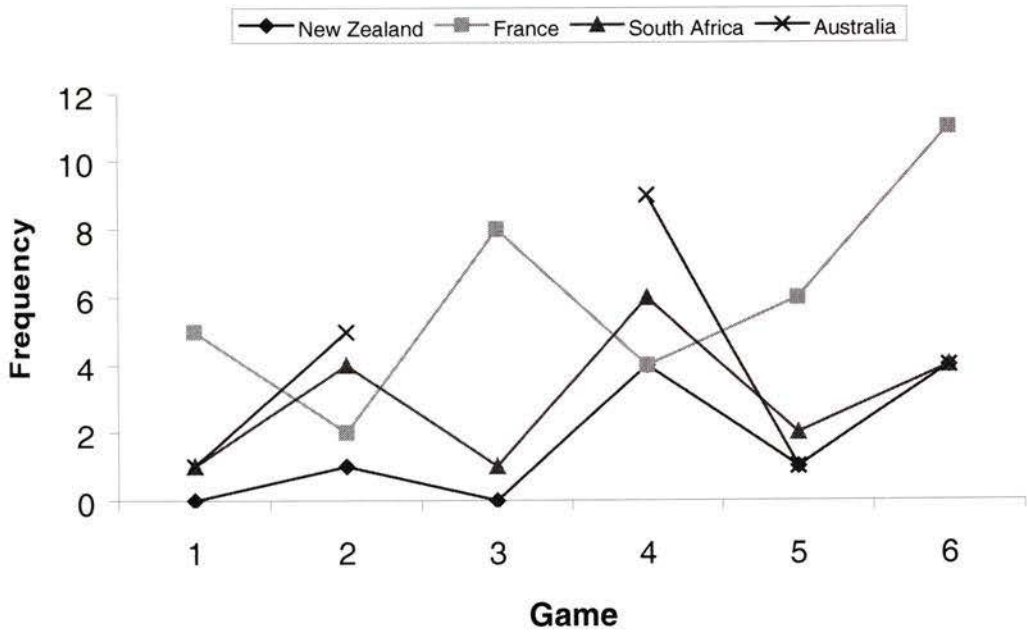

Figure 2. Hostile aggressive act frequencies over all matches played by Successful Teams.

(Note: No data for Game 3 for the Australian team.)

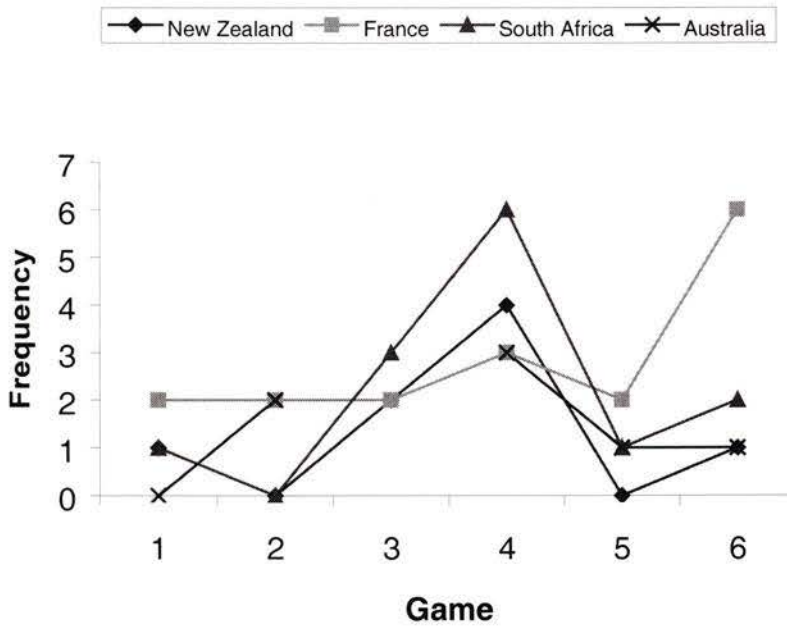

Figure 3. Instrumental aggressive act frequencies over all matches played by Successful Teams.

(Note: No data for Game 3 for the Australian team.)

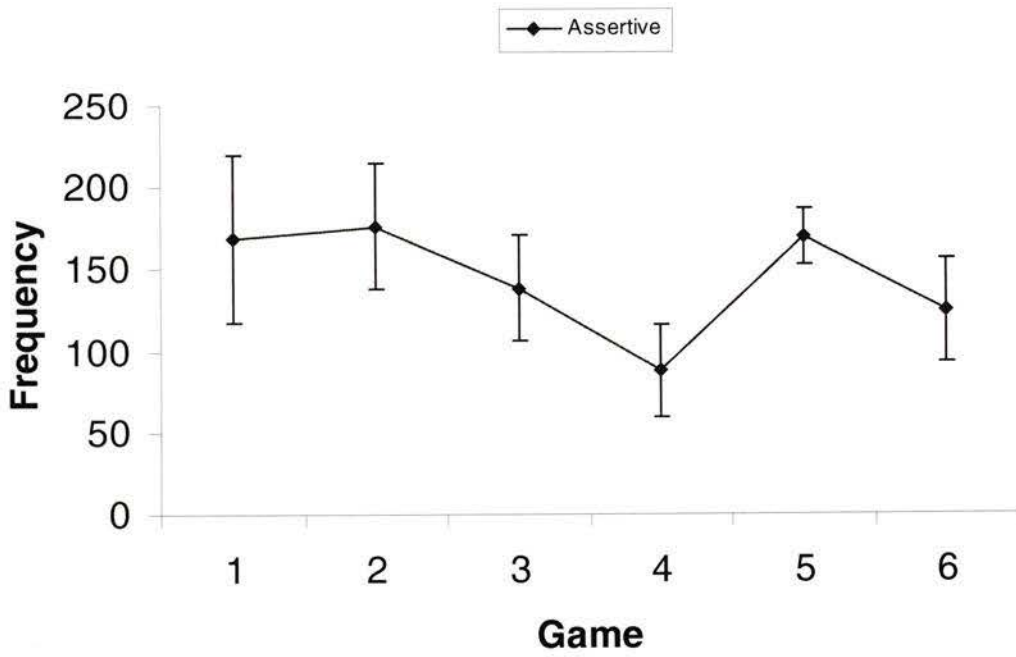

Figure 4. Pooled assertive acts data of all games played by Successful Teams.

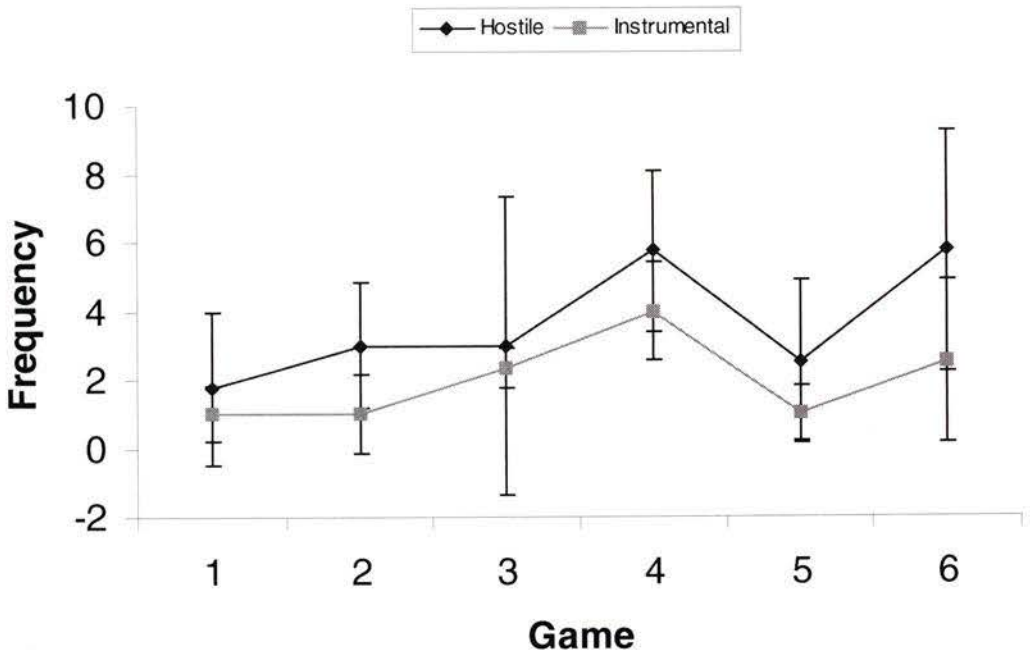

Figure 5. Pooled hostile and instrumental aggression data of all games played by Successful Teams.

indicated that significant differences existed between the mean scores for the three behaviors (F (2,62) = 227.56, $p< 0.01$). Post hoc T-tests revealed that assertive behavior (M=145.5) was significantly higher than hostile aggression (M=3.52, t (22)=15.01, $p< 0.01$) and instrumental aggression (M= 1.96, t (22)= 15.20, $p<0.01$), and that hostile aggression was significantly greater than instrumental aggression (t (22)=2.26, $p<0.05$).

Aggressive and assertive behavior and field position

Assertive, hostile aggressive and instrumental aggressive behaviors were analyzed with relation to the position on the field where they occurred. Behaviors were coded as having occurred in either the attacking, neutral, or defensive zone of the field. Using pooled data of all successful teams (n=23), a series of one way ANOVAs was conducted for hostile aggressive, instrumental aggressive and assertive acts at each field position. Results revealed significant differences between assertive behavior and the three zones on the field (F (2,62)= 96.18, $p<0.01$). Post hoc t-tests revealed significant differences between acts occurring in the neutral zone (M=99.3) compared to the attacking (M=35.3, t (22)= -8.06, $p<0.01$) and defensive zones (M=10.87, t (22)= 13.38, $p<0.01$). A significant difference was also found between assertive acts occurring in the attacking and defensive zones (t (22)= 5.05, $p<0.01$).

Hostile aggressive acts were analyzed, with significant ANOVA results found (F (2,62)=12.66, $p<0.01$). Post hoc t-tests revealed significant differences between acts occurring in the neutral zone (M=2.30) compared to the attacking (M=0.74, t (22)= -3.25, $p<0.01$) and defensive zones (M=0.35, t (22)= 4.31, $p<0.01$). No significant difference was found between hostile aggressive acts occurring in the attacking and defensive zones.

ANOVA results for instrumental aggression were significant (F (2,62) =5.60 ,p<0.01) and post hoc t-tests again conducted. A significant difference was found between acts in the neutral (M=1.09,) and defensive zone (M=0.30, t (22)=3.29,p<0.01). No significant difference was found between either the neutral or defensive zones with attacking zone (M=0.61).

Aggressive and assertive behavior and Time

Assertive, hostile aggressive and instrumental aggressive behaviors were analyzed with relation to the time during the match that they occurred. Acts were coded as having occurred in either the 1st half, 2nd half, or overtime of the match. Using pooled data of all successful teams, a series of one way ANOVAs was conducted for hostile aggressive, instrumental aggressive and assertive acts for each time in the match. To account for the difference in time between the 1st and 2nd halves and the overtime period (which was only 20 minutes, compared to the 40 minutes for a half) the data for the halves was divided by two, thus giving an average score for a 20 minute period.

Results revealed no significant differences between assertive, hostile aggressive and instrumental aggressive acts and time.

Aggressive and assertive behavior and stage in the tournament

Hostile aggressive, instrumental aggressive and assertive behaviors of the successful teams were examined longitudinally over the duration of the tournament. The tournament was divided into pool, quarterfinal, semi final, and final (which also included the consolation 3rd and 4th playoff) rounds. Results of an ANOVA indicated there were significant differences between the levels assertive and hostile and instrumental aggressive acts during different stages of the tournament (F (3,12)=7.00,p<0.01). T-tests revealed that assertive acts were significantly greater in pool play (M=160.5, n=4) than quarter finals (M=88.0, n=4, t (3)=3.32,p<0.05) matches, and that semi-finals were significantly greater (M=170.0) than quarter-finals matches (t (3)=-4.93,p<0.01). No significant differences were found between stage of the tournament and hostile or instrumental aggression.

Results of statistical analyses are presented in Table 4

Unsuccessful Teams

Descriptive Results

The hostile aggressive, instrumental aggressive and assertive behaviors recorded for the individual unsuccessful teams over all games of the tournament are presented in Table 5. Table 6 shows the means and standard deviations for pooled data over each

Table 4

Results of ANOVAs and T-tests Conducted on Successful Teams Data

Question	Behavior	F	P		t	P
All Acts		227.56	0.01	Assertive vs Hostile	15.01	0.01
				Assertive vs Instrumentl	15.2	0.01
				Hostile vs Instrumental	2.26	0.05
Field Position	Assertive Acts	96.18	0.01	Attacking vs Neutral	-8.06	0.01
				Attacking vs Defensive	5.05	0.01
				Neutral vs Defensive	13.38	0.01
	Hostile Aggression	12.66	0.01	Attacking vs Neutral	-3.25	0.01
				Attacking vs Defensive	-	-
				Neutral vs Defensive	4.31	0.01
	Instrumental Aggression	5.6	0.01	Attacking vs Neutral	-	-
				Attacking vs Defensive	-	-
				Neutral vs Defensive	3.29	0.01
Time	Assertive Acts	-	-	1st vs 2nd	-	-
				1st vs Ovt	-	-
				2nd vs Ovt	-	-
	Hostile Aggression	-	-	1st vs 2nd	-	-
				1st vs Ovt	-	-
	Instrumental Aggression	-	-	1st vs 2nd	-	-
				1st vs Ovt	-	-
				2nd vs Ovt	-	-
Tournament Stage	Assertive	7	0.01	Pool vs Quarter	3.32	0.05
				Pool vs Semi	-	-
				Pool vs Final	-	-
				Quarter vs Semi	-4.93	0.01
				Semi vs Final	-	-
	Hostile Aggression	-	-			
	Instrumental Aggression	-	-			

Table 5

Assertive, Hostile Aggressive, and Instrumental Aggressive Act Frequencies Over all Matches Played by Unsuccessful Teams

		Game		
		1	2	3
Team	Behavior			
Spain	Assertive	62	66	87
	Hostile	0	1	2
	Instrumental	3	0	0
Namibia	Assertive	108	101	82
	Hostile	4	5	0
	Instrumental	3	4	0
Italy	Assertive	96	80	73
	Hostile	2	14	3
	Instrumental	2	5	4
USA	Assertive	87	116	86
	Hostile	9	3	5
	Instrumental	4	1	0
Japan	Assertive	129	125	N/A
	Hostile	3	5	N/A
	Instrumental	2	3	N/A

Table 6

Pooled Data Over Each Game Played by Unsuccessful Teams

		Game					
		1		2		3	
Behavior	N	Mean	SD	Mean	SD	Mean	SD
Assertive	14	96.4	24.85	97.6	24.54	82	6.38
Hostile	14	3.6	3.36	5.6	4.98	2.5	2.08
Instrumental	14	2.8	0.84	2.6	2.07	1.00	2.00

game played by the five teams. Table 7 displays the mean and standard deviation for each behavior for all games (14 in total) played by the five successful teams. Figures 6 to 8 show the hostile aggressive, instrumental aggressive, and assertive behaviors recorded for the individual teams during the tournament. Figure 9 and 10 display the means and standard deviations of scores for pooled data of all games played by all five teams.

A One-way Analysis of Variance was conducted on the mean scores for hostile aggressive, instrumental aggressive, and assertive behaviors. Results of the ANOVA indicated that significant differences existed between the mean scores for the three behaviors ($F(2,39) = 116.80$, $p< 0.01$). Post hoc Students T-tests revealed that assertive behavior ($M=83.29$) was significantly higher than hostile aggression ($M=4.00$, $t\ (13)=10.71$, $p< 0.01$) and instrumental aggression ($M= 2.21$, $t\ (13)= 11.03$, $p<0.01$). Hostile and instrumental aggressive did not differ significantly.

Aggressive and assertive behavior and field position

Assertive, hostile aggressive and instrumental aggressive behaviors were analyzed with relation to the position on the field where they occurred. Using pooled data of all unsuccessful teams (n=14), a series of one way ANOVAs was conducted for aggressive and assertive acts at each field position. Results revealed significant differences between assertive behavior and the three zones on the field ($F(2,39)= 64.92$, $p<0.01$). Post hoc t-tests revealed significant differences between acts occurring in the neutral zone ($M=62.1$) compared to the attacking ($M=17.9$, $t\ (13)= -7.93$, $p<0.01$) and

Table 7

Pooled Mean and Standard Deviation for Assertive, Hostile Aggressive, and Instrumental Aggressive Acts for All Games Played by Unsuccessful Teams

Behavior	N	Mean	Standard Deviation
Assertive	14	83.29	27.46
Hostile	14	4.00	3.72
Instrumental	14	2.21	1.76

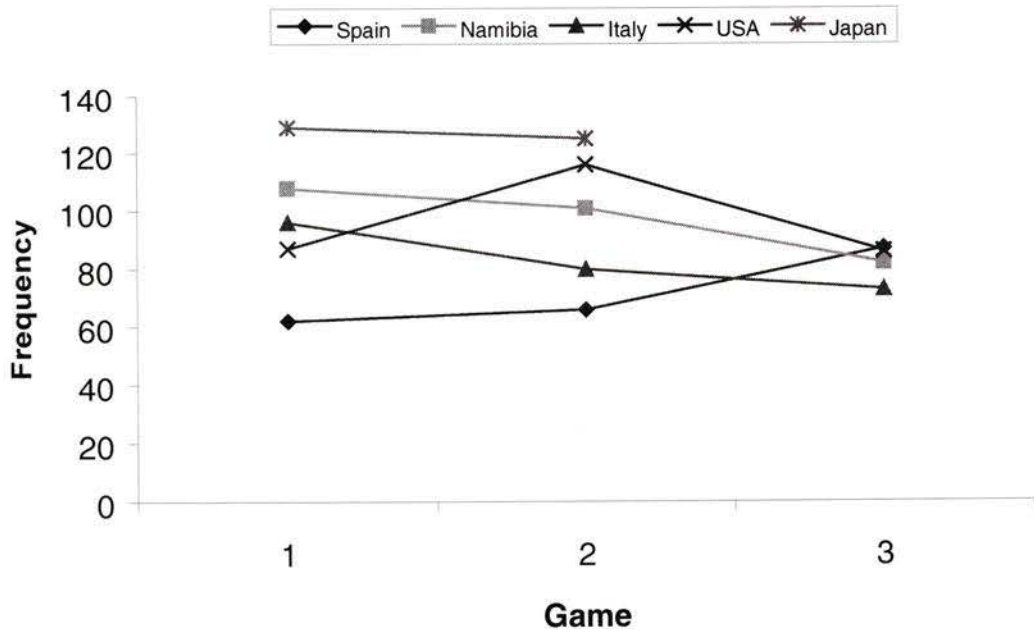

Figure 6. Assertive act frequencies over all matches played by unsuccessful teams.

(Note: No data for Game 3 for the Japanese team.)

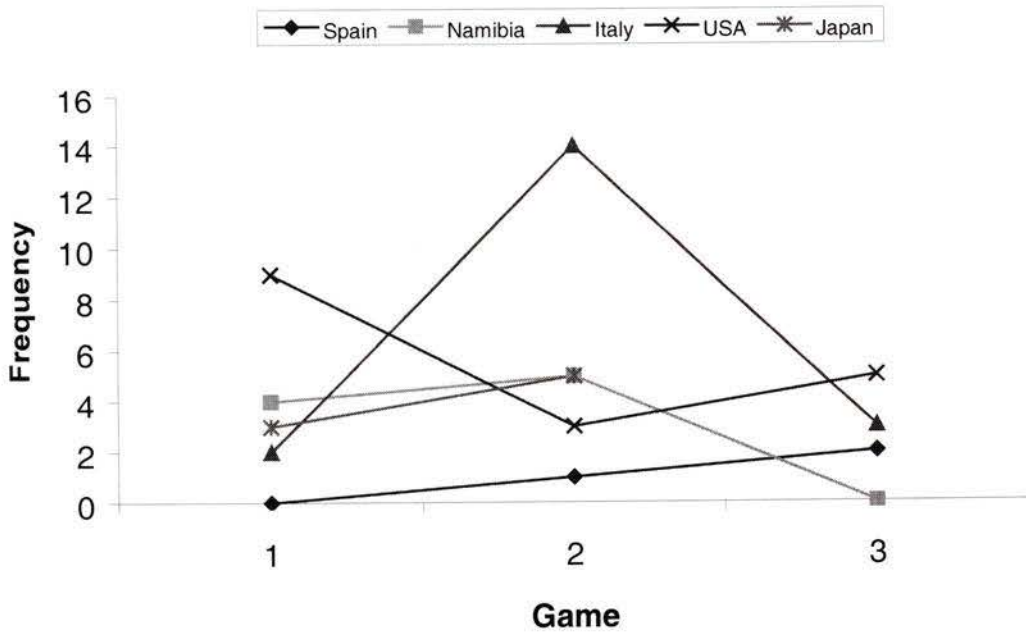

Figure 7. Hostile aggressive act frequencies over all matches played by Unsuccessful Teams. (Note: No data for Game 3 for the Japanese team.)

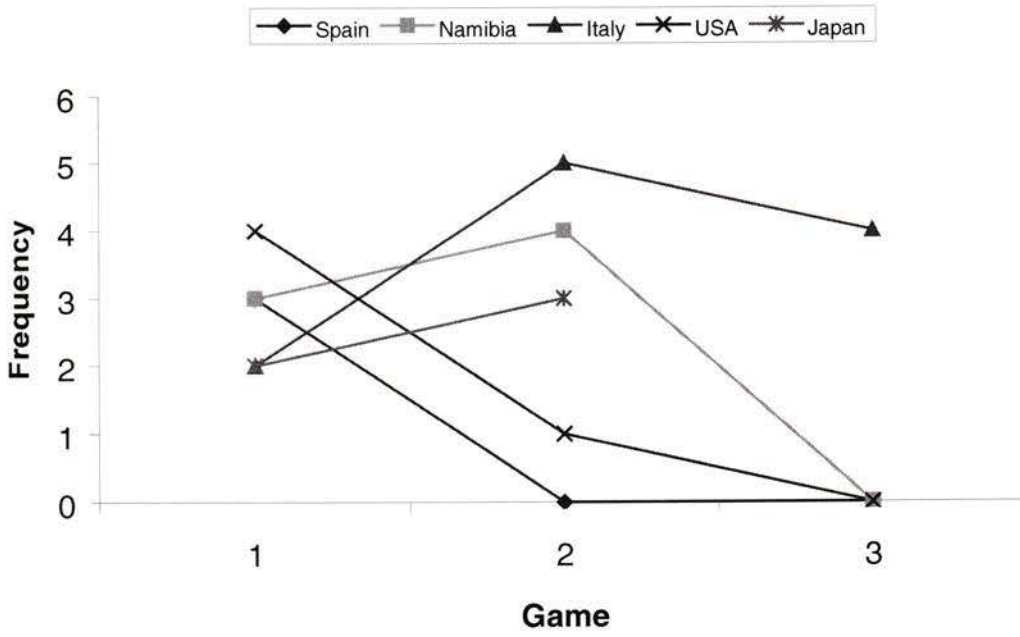

Figure 8. Instrumental aggressive act frequencies over all matches played by Unsuccessful Teams.

(Note: No data for Game 3 for the Japanese team.)

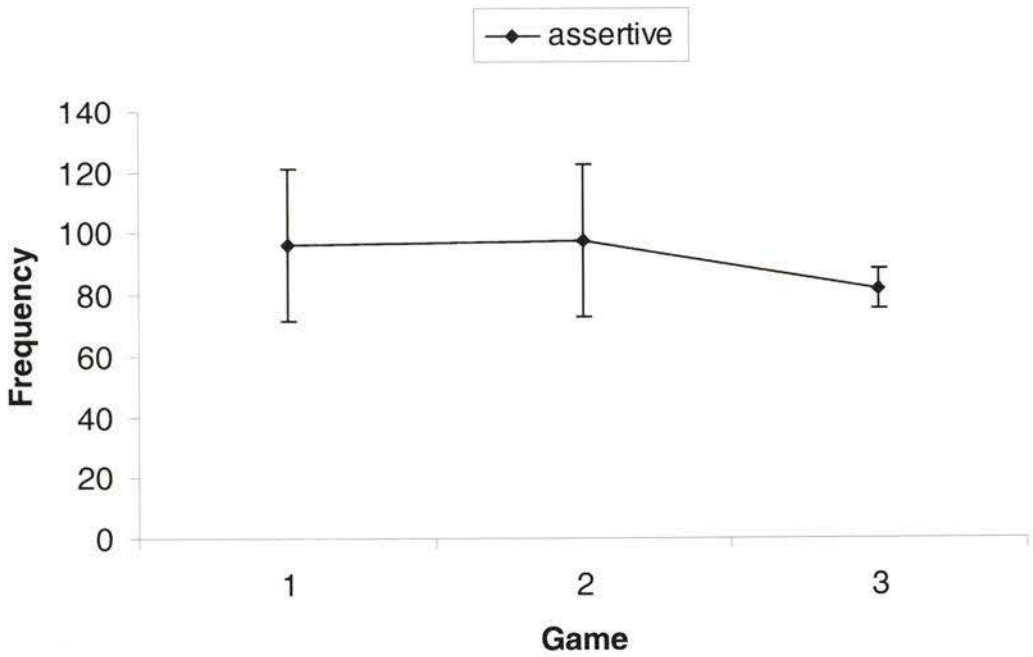

Figure 9. Pooled assertive acts data of all games played by Unsuccessful Teams.

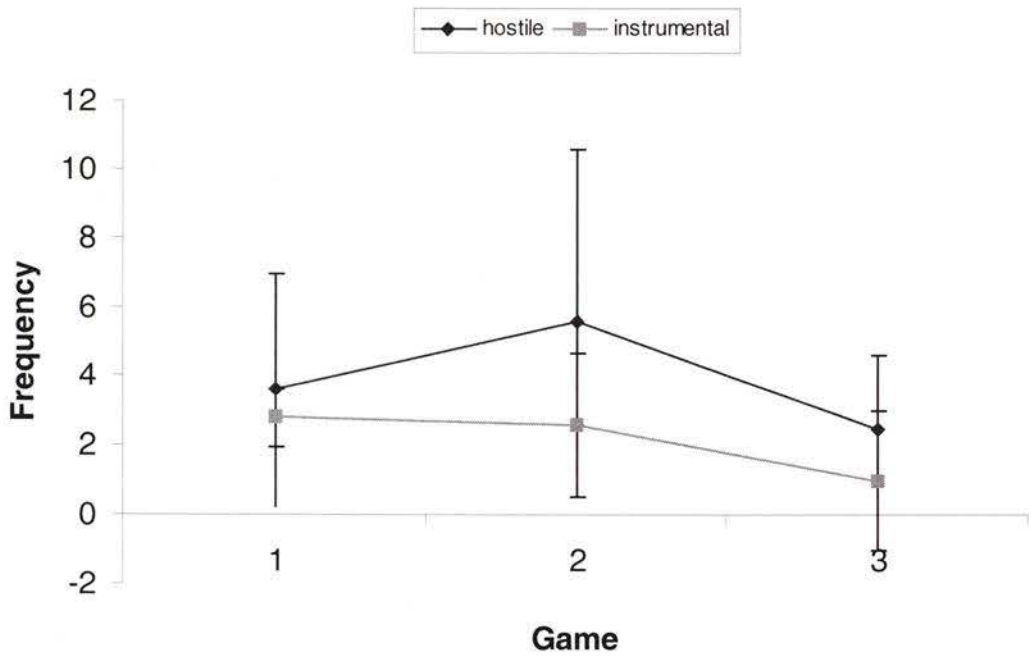

Figure 10. Pooled hostile and instrumental aggression data of all games played by Unsuccessful Teams.

defensive zones (M=12.71, t (13)= 9.89, p<0.01). No significant difference was found between assertive acts occurring in the attacking and defensive zones.

Hostile aggressive acts were analyzed, with no significant ANOVA results found. Results for ANOVA conducted on instrumental aggression were significant F (2,39)=8.35,p<0.01) and post hoc t-tests conducted. A significant difference was found between acts in the neutral (M=1.57) zone and those in the attacking (M=0.14, t (13)=-3.84, p<0.01) and defensive zone (M=0.64, t (13)=2.19,p<0.05). No significant difference was found between attacking and defensive zones.

Aggressive and assertive behavior and Time

Assertive, hostile aggressive and instrumental aggressive behaviors were analyzed with relation to the time during the match that they occurred. Using pooled data of all unsuccessful teams, a series of t-tests was conducted for hostile aggressive, instrumental aggressive and assertive acts for each time in the match. Results revealed no significant differences between assertive, hostile aggressive, or instrumental aggressive acts and time.

Comparisons between Successful and unsuccessful teams

Assertive, hostile aggressive and instrumental aggressive acts were compared between successful and unsuccessful teams. ANOVA results conducted on the pooled data for successful and unsuccessful teams found significant differences between the two groups (F (5,105)=145.52,p<0.01). Post hoc t-tests revealed a significant difference in the assertive

acts of successful (M=145.5, n=23) and unsuccessful (M=83.3, n=14, t (35)=5.20, p<0.01) teams. No significant differences were found between successful and unsuccessful teams for hostile aggression and instrumental aggression. These results are presented in Figures 11 and 12.

Successful and Unsuccessful teams and field position

ANOVA results revealed significant differences between the assertive and hostile and instrumental aggressive behaviors of successful and unsuccessful teams and field position (F(17, 315)=116.76, p<0.01). Post hoc t-tests conducted indicated that successful teams had significantly greater assertive acts than unsuccessful teams in the attacking zone (M=35.3, n=23, versus M=17.9, n=14, t (35)= 3.16, p<0.01) and the neutral zone (M=99.3, n=23, versus M=62.1, n=14, t (35)=4.67, p<0.01). No significant difference was found between the teams in the defensive zone of the field.

No significant differences were found using post hoc t-tests between successful and unsuccessful teams and field position for hostile aggressive behaviors. Post hoc t-tests conducted on instrumental aggressive acts found a significant difference between successful (M=0.61, n=23) and unsuccessful teams (M=0.14, n=14, t (35)=2.45, p<0.05) for acts occurring in the attacking zone. No differences were found between the teams and the neutral or defensive zones.

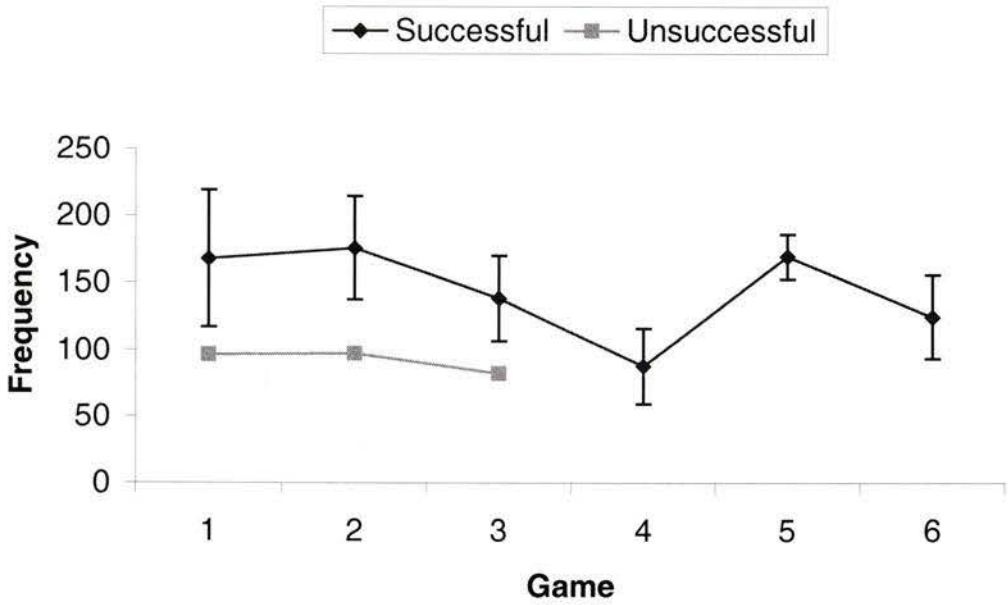

Figure 11. Pooled assertive acts of all games played by Successful and Unsuccessful Teams.

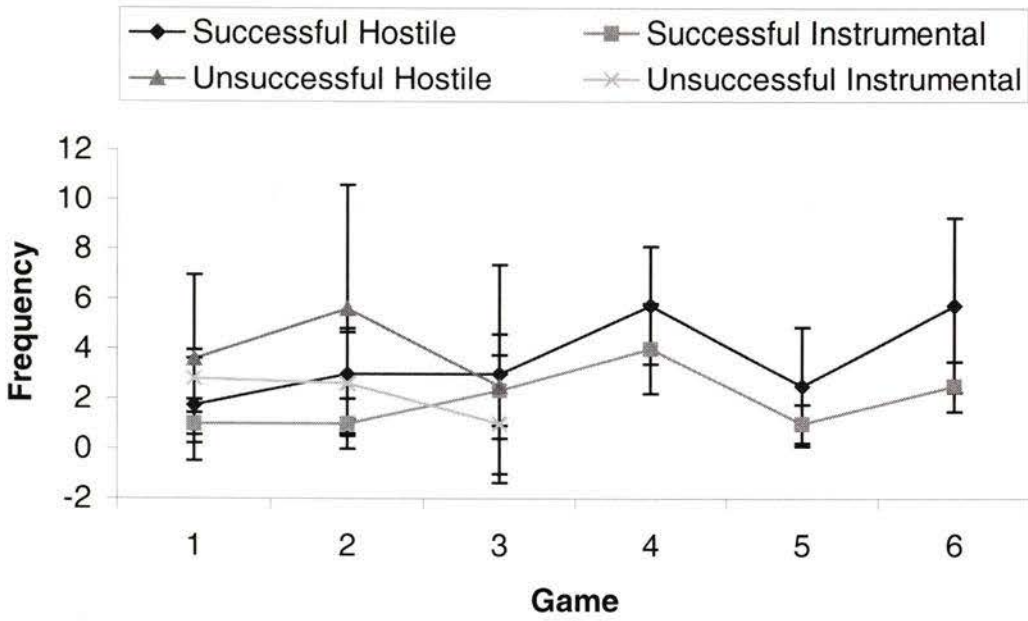

Figure 12. Pooled hostile and instrumental acts of all games played by Successful and Unsuccessful Teams.

Successful and Unsuccessful teams and Time

ANOVA results indicated there was a significant difference between assertive and aggressive acts and time for the successful and unsuccessful teams (F (14,213)=90.87, $p<0.01$). T-tests revealed that successful teams had greater scores for assertive behavior for the 1st half (M=68.9, n=23) and also the 2nd half (M=73.3, n=23) of matches, compared to the 1st (M=44.7, n=14, t (35)=4.09,$p<0.01$) and 2nd half (M=48.0, n=14, t (35)=3.72, $p<0.01$) of unsuccessful teams matches. No significant differences were found between hostile and instrumental aggression and time for the two groups of teams.

Results of all statistical analyses are presented in Table 8

Aggressive and assertive acts and points differential for successful and unsuccessful teams

The total number of aggressive (both hostile and instrumental) and assertive acts were coded on the basis of point's differential in the game at the time of the behavior. The margin increased in increments of seven points (one converted try) up to a margin greater than three converted tries (more than 21 points). Data was graphed in order to assess patterns of behavior in relation to point's differential in a match.

Results for successful and unsuccessful teams were plotted in Figures 13 to 16.

Table 8

Results of ANOVAs and T-tests Conducted on Successful and Unsuccessful Teams Data

Question	Behavior	F	P		t	P
All Acts		145.52	0.01	Successful Assertive vs Unsuccessful Assertive	5.2	0.01
				Successful Hostile vs Unsuccessful Hostile	-	-
				Successful Assertive vs Unsuccessful Assertive	-	-
Field Position	Assertive Acts	116.76	0.01	Successful Attack vs Unsuccessful Attack	3.16	0.01
				Successful neutral vs Unsuccessful neutral	4.67	0.01
				Successful defense vs Unsuccessful defense	-	-
	Hostile Aggression			Successful Attack vs Unsuccessful Attack	-	-
				Successful neutral vs Unsuccessful neutral	-	-
				Successful defense vs Unsuccessful defense	-	-
	Instrumental Aggression			Successful Attack vs Unsuccessful Attack	2.45	0.05
				Successful neutral vs Unsuccessful neutral	-	-
				Successful defense vs Unsuccessful defense	-	-
Time	Assertive Acts	90. 87	0.01	Successful 1st half vs Unsuccessful 1st half	4.09	0.01
				Successful 2nd half vs Unsuccessful 2nd half	3.72	0.01
	Hostile Aggression			Successful 1st half vs Unsuccessful 1st half	-	-
				Successful 2nd half vs Unsuccessful 2nd half	-	-
	Instrumental Aggression			Successful 1st half vs Unsuccessful 1st half	-	-
				Successful 2nd half vs Unsuccessful 2nd half	-	-

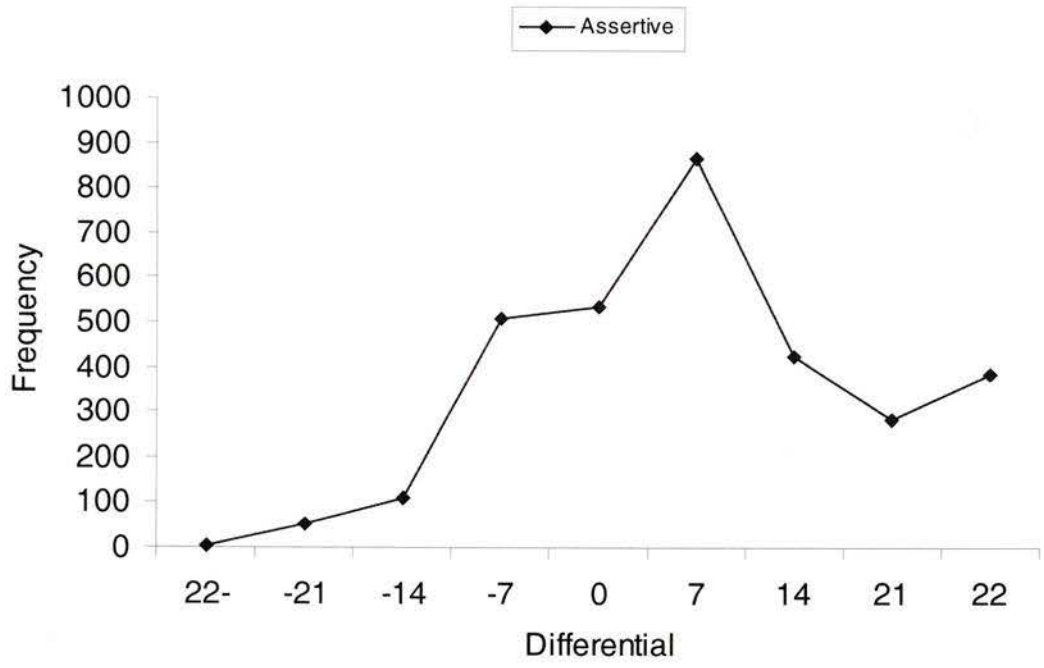

Figure 13. Assertive acts and points differential for Successful Teams.

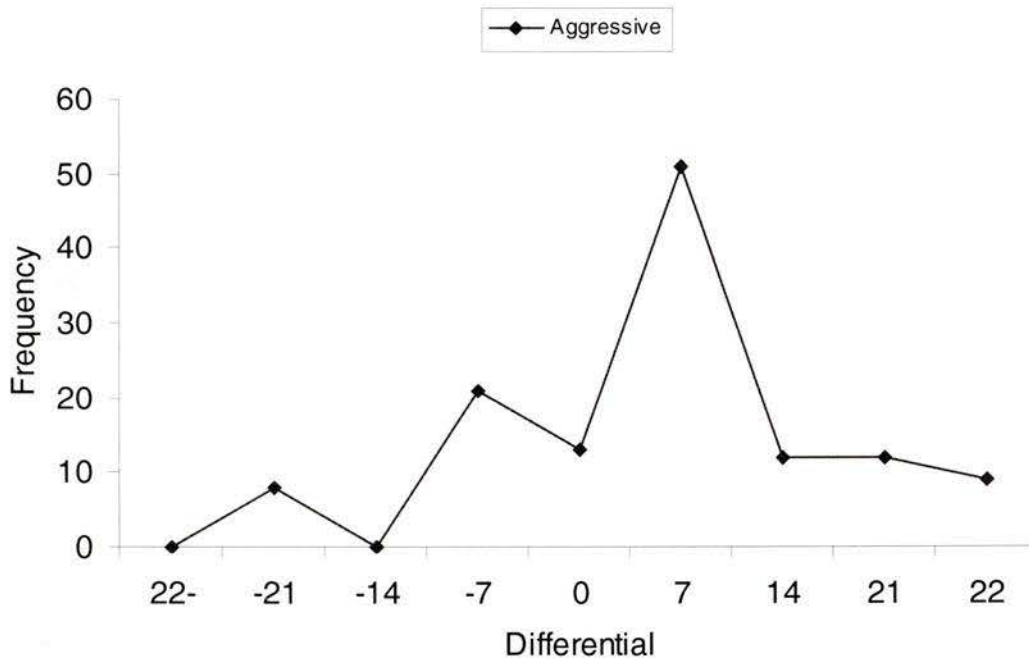

Figure 14. Aggressive acts and points differential for Successful Teams.

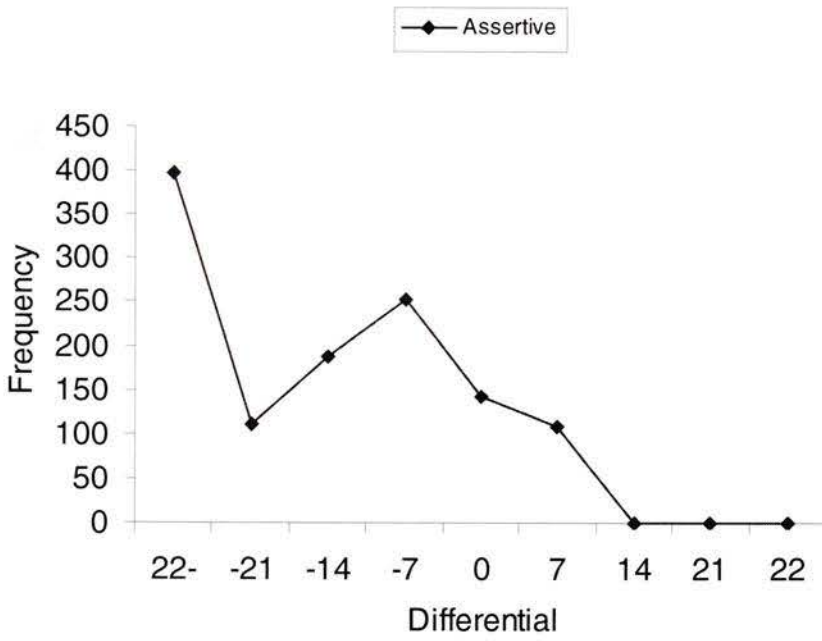

Figure 15. Assertive acts and points differential for Unsuccessful Teams.

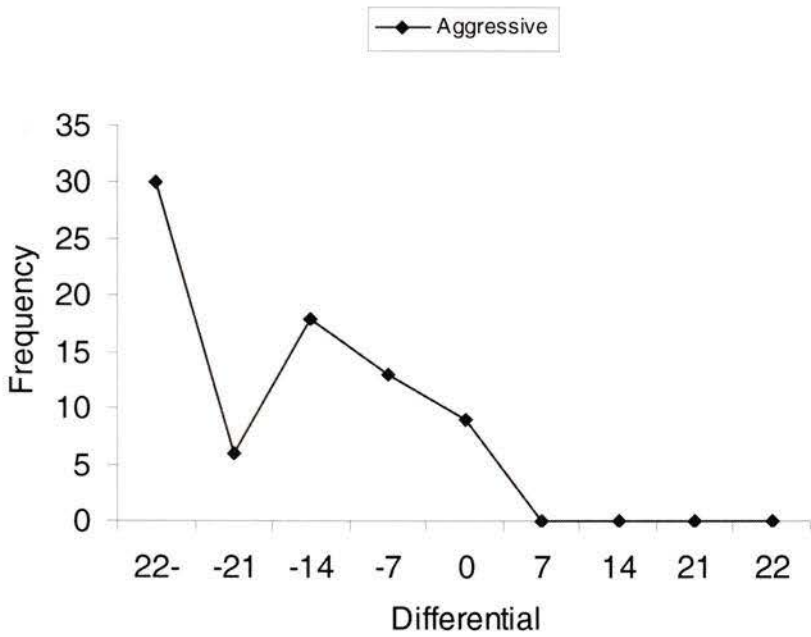

Figure 16. Aggressive acts and points differential for Unsuccessful Teams.

CHAPTER V

DISCUSSION

This chapter presents the results as they relate to the research questions, and previous findings. First, general observations of the results of the successful and unsuccessful teams will be discussed and second, the specific research questions will be addressed. Finally implications of the findings for rugby coaches are discussed.

General Observations

Several patterns of behavior were apparent from the data for all teams competing. Assertive behavior was considerably greater in frequency than acts of hostile or instrumental aggression. This was to be expected as assertive acts can be considered as the essentials of successful rugby and aggressive acts of any kind (hostile or instrumental) are typically only a minor part of the action involved in the game. It can also be argued that at the elite international level, the pace of the game could mean that there simply isn't a lot of time for players to become involved in blatant acts of violence. Finally, the amount of television coverage that international matches receive means that hostile and instrumental aggressive acts are likely to be detected, and may result in punitive actions against the players involved including suspensions or court action which might affect a players decision to commit an aggressive act. These suspensions can result from post game analysis of incidents by match officials. When considering the placement of the assertive and hostile and instrumental aggressive behavior the majority were found to occur in the neutral zone of the field, defined as the area between the two 22 meter lines on the field. This again was expected, as the

neutral was the largest of the three zones designated in size. This zone included roughly half of the total area of the field, whereas the attacking and defensive zones divided the other half (therefore were only about a quarter of the field each). On defense most teams elect to kick the ball out of this zone and contact is not extensive. As both teams would endeavor to clear the ball from their defensive zones, the total amount of contact or acts occurring in the attacking or defensive zones would be less than those occurring in the neutral zone.

Successful Teams

Descriptive data indicated that as expected assertive behavior was significantly greater than either hostile or instrumental aggression. Assertive acts, as can be seen in Figure 4, decreased as the tournament continued until teams reached the semi final stage, where a large increase occurred. A decrease occurred again for the final and consolation final match. This pattern mirrored that of hostile and instrumental aggression, which steadily rose throughout the tournament for the successful teams, decreased for the semi final, and then rose again for the final (Figure 5). This pattern seems to indicate that for successful teams' assertive and hostile and instrumental aggression have an inverse relationship. A possible reason for this relationship could be that hostile and instrumental aggression resulted from frustration on behalf of the successful teams due to their own poor play. As the majority of assertive acts occur when teams were in possession of the ball, a decrease in the number of assertive acts would indicate that the teams were not controlling the play as much, therefore they may have become frustrated with the oppositions efforts, resulting in an increase in

hostile and instrumental aggressive behavior, suggesting support for the frustration aggression theory of Berkowitz (1993).

Unsuccessful Teams

Descriptive data indicated that, as expected, assertive behavior was also significantly greater than either hostile or instrumental aggression. Frequencies of hostile and instrumental aggression were on average greater for unsuccessful teams than successful teams, while the number of assertive acts was well below that of successful teams (Table 6). The lower level of assertive acts is not surprising since the unsuccessful teams had been outplayed by their opponents, and therefore would not be controlling play to a large degree. The greater amount of hostile and instrumental aggressive acts in the unsuccessful teams could be evidence of the frustration aggression theory, result in the players reacting violently to their inability to compete with their opponents.

Research Questions

Research Question 1. Do successful teams (top four finishers) demonstrate higher levels of assertive and instrumental aggressive and lower levels of hostile aggressive behaviors; compared to lower level teams (bottom four teams)?

Comparing assertive and aggressive behaviors between successful and unsuccessful teams, significant differences were found for assertive acts but not for hostile and instrumental aggressive acts. Successful teams had significantly greater assertive acts (M=145.58) than the unsuccessful teams (M=83.29). This result was not unexpected. As mentioned previously, the number of assertive acts is indicative of the superior level of play that a successful team in a match displays, therefore the teams that won matches (successful teams) would have been expected to have higher numbers of assertive acts than teams that lost all matches played (unsuccessful teams). No significant differences where found between successful and unsuccessful teams for hostile or instrumental aggressive acts, indicating that both sets of teams used aggressive behavior to a similar degree. This finding is in contrast to Smith (1978), Kerr and Kelly (1982), and Underwood and Whitwood (1980), who found that as the experience and competitive level of athletes increases, so to does the level of aggressive behavior they display. Therefore it follows that the successful teams should have displayed greater levels of hostile and instrumental aggressive behavior than the unsuccessful teams. This result also disagrees with Volkamer (1971) who found that lower level teams were more aggressive than higher and moderately ranked teams.

A contributing factor to the lack of significant differences between the successful and unsuccessful teams was the very low amount of both hostile and instrumental aggressive acts observed throughout the tournament. Another possible reason relates to moral reasoning theory. Bredemeier (1994) proposed the idea of "Bracketed morality" which describes a suspension of everyday morality during times of athletic competition. This "game" morality may in fact not be related to competitive level, and may be just a result of an extended exposure to the sports environment or "rugby culture". Players involved in the sport may develop a perception of aggressive acts as morally acceptable and therefore appropriate behavior during all levels of competition. The failure to find significant differences between the aggressive behaviors of the two groups of teams supports earlier research examining aggressive behavior, experience level, and success in ice hockey (Wankle, 1973; Widmeyer and Birch 1979.)

Research Question 2. Do successful teams as they move from pool play to final matches increase the levels of assertive behavior, instrumental aggressive behavior, and hostile aggressive behavior?

A longitudinal assessment of the assertive and aggressive behavior of successful teams as they progressed through the different stages of the tournament found significant differences in levels of assertive play between the preliminary rounds but no differences for either of the aggressive behaviors examined. Results indicated that as teams moved from pool play ($\underline{M}$= 160.5) to quarterfinal matches ($\underline{M}$= 88.0) the level of assertive acts decreased. As mentioned earlier, assertive acts are an indication of the level of control a team displays

over its opponent. The decrease in assertive acts between pool and quarter rounds can be explained as the result of the successful teams encountering a higher standard of opposition, and therefore not dominating the matches to a similar degree. However, a significant difference was also found between quarterfinal and semifinal (M=170.0) rounds. This does not follow the assumption of stronger opposition resulting in decreased levels of assertive behavior, and may be best explained by looking at the two matches on an individual level. One semifinal match was a very high scoring game, in which both teams played open, attacking rugby, which resulted in numerous examples of assertive play. The other match was in contrast defensively dominated and low scoring, eventually ending in a tie resulting in an overtime period. Both teams in this match displayed high levels of assertive play, especially on defense, and had to play an extra 20 minutes to determine the victor, resulting in a greater frequency of assertive behavior.

No significant differences were found between rounds for hostile or instrumental aggressive behavior, indicating that as the intensity of the competition increased the level of aggressive play was unaffected. This was surprising as it could be assumed that as teams progressed closer to the final they would experience greater physiological arousal in matches and greater feelings of frustration if their goal directed behavior was obstructed, significantly increasing the chances of aggressive play. This argument can be countered by a social learning perspective which found that because of the importance of these matches increased, the players were more restrained in their actions so as to avoid punitive actions which could affect the outcome of matches, or the performance of the team later in the tournament. This concurs with Blair (1985) who stated that as athletes increase in competitive level (i.e. progress through the tournament) their attitude to sports becomes more professional

(professional in this context relates to the attitude of players becoming more 'winning' orientated and being prepared to do anything to achieve that goal).

Research Question 3. Is assertive and hostile and instrumental aggressive behavior positively related to successful performance?

To determine if assertive and aggressive behavior is positively related to performance, the pooled data of assertive acts and hostile and instrumental aggressive acts between successful and unsuccessful teams was compared. Results indicated that a significant difference only existed in the amount of assertive acts between the successful (M=145.48) and unsuccessful (M=83.29) teams, indicating the amount of assertive acts committed by a team was positively related to successful performance. As differences in hostile and instrumental aggression between the groups were not significant, it can be proposed that there was no relationship between aggressive behavior and the performance of successful and unsuccessful teams. The failure to find a relationship between aggressive behavior and performance has been found previously by Widmeyer and Birch (1984), and Wankle (1973) in ice hockey, Volkamer (1971) in soccer, and by Sachs (1978) in women's softball.

Research Question 4. Do patterns of hostile aggression, instrumental aggression, or assertive acts differ during periods of the first or second half of a match?

Analysis of the timing of the assertive and aggressive acts in matches failed to find any relationship between acts of hostile and instrumental aggression between the 1st or 2nd half of a match. No differences were found when considering both successful teams or unsuccessful teams separately (Table 8). Previous research had suggested that as the matches progressed, levels of aggressive behavior (both instrumental and hostile) would increase, which did not occur (Kelly and McCarthy, 1979: Worrel and Harris, 1986). Coulomb and Pfister (1998), who examined soccer, found that aggression levels differed between the halves of a match, with instrumental aggression decreasing in the second half of matches, and hostile aggression showing an opposite relationship. It was suggested by Coulomb and Pfister that as instrumental aggression is reasoned, goal orientated behavior, players knew when to use it effectively to improve their chance of success, whereas hostile aggression, was proposed to be more common at the end of matches because frustration levels were greatest at this time. This relationship was not evident in the present study. Assertive behavior was not found to be significantly related to time for either successful or unsuccessful teams. The analysis of assertive and hostile and instrumental aggressive behavior and time between successful and unsuccessful teams indicated that successful teams had greater numbers of assertive acts in both the first and second halves of matches than unsuccessful teams. No significant differences were found between hostile and instrumental aggression and time for the two groups of teams.

Research Question 5. Do teams exhibit higher levels of instrumental or hostile aggression when they are within their offensive or defensive zones (inside their own 22m line or their opponents 22m line) compared to the neutral zones of the field (between the two 22m lines)?

Differences in the frequency of assertive and aggressive behavior in relation to field position was examined by coding all acts as occurring in either a attacking, neutral, or defensive position on the field. As mentioned earlier in the chapter the majority of the acts occurred in the neutral zone of the field because of its size and also the style of play itself. Pooled data for the successful teams indicated that hostile aggressive acts occurred significantly more frequently in the neutral zone (M=2.30) compared to either the attacking (M=0.74) or defensive (M=0.35) zone. Interestingly, there was no significant difference between the number of acts occurring in the attacking and defensive zones. Pooled data for the unsuccessful teams failed to find any significant results for hostile aggression. Instrumental aggression results for successful teams indicated that again a higher number of acts occurred in the neutral zone (M=1.09) compared to the defensive (M=0.30) zone. There was no significant difference between acts occurring in the attacking zone with the other two zones. Instrumental aggression results for unsuccessful teams followed the pattern of hostile aggression for the successful teams, with a greater number of acts occurring in the neutral zone (M=1.57), compared to the attacking (M=0.14) and defensive (M=0.64) zones. Again there was no significant difference between the attacking and defensive zones. These results indicate that both successful and unsuccessful teams were more likely to engage in aggressive behavior in the neutral zone of the field, compared to the attacking or defensive

zones. Two possible explanations for this pattern are apparent. The first and most plausible explanation is that as the majority of play occurred in the neutral zone (as outlined earlier) and therefore the chances of aggressive acts occurring in this zone are very high. The second explanation is that the neutral zone was perceived by players to be the best place to aggress, as it is the area on the field where the consequences of being penalized for foul play are the least punitive. If acts that occur in the attacking zone are penalized, then possession is lost and a scoring opportunity is wasted. Similarly, if an offense is penalized in the defensive zone, then the opposition has possession, and the opportunity to score either a penalty goal or possibly a try. Therefore it is possible that the players made a conscious decision to aggress mainly in the neutral zone in order to reduce the effect of punitive actions that could result from their actions. Coulomb and Pfister (1998) argued that the more experience and excellence players acquire during training and competition, then the more likely they are to use aggressive behaviors. This "experience" could also include the knowledge of where to aggress on the field. The use of cognitive functions to determine where the best place to aggress is on the field does not lend itself to support the cathartic or instinct theories of aggression as they contend aggressive behavior is a more random response to pent up energy. More suitable is the social learning theory of aggression which acknowledges that if an aggressive behavior is successful in removing the cause of frustration, then it is likely the individual will use the same behavior if that situation arises again. The greater the likelihood and severity of a punishment though, then the less chance there is of aggression occurring. This inhibitory effect is therefore a product of learning by the individual, and could result in the players deciding to aggress in the neutral zone the majority of the time.

Research Question 6. As the margin between the teams' scores increases, do teams with a negative point's differential (those losing) exhibit higher levels of hostile aggression, compared to teams with a positive point's differential?

The final area of analysis in the study was that of the relationship between assertive and aggressive behavior and the point's differential of teams. Aggressive and assertive acts were coded on the basis of point's differential in the game at the time of the behavior. The margin increased in increments of seven points (one converted try) up to a margin greater than three converted tries (more than 21 points). Results for the assertive and aggressive behaviors of the successful and unsuccessful teams were plotted to find evidence of any pattern. Plots for the successful teams displayed similar patterns (resembling a bell curve) for both assertive and aggressive behavior, with the majority of acts occurring between –7 and +7 points. This pattern indicated that for successful teams if the point's differential was only one converted try then the frequency of assertive and aggressive acts were at it highest. As the margin between the scores increased, the level of assertive and aggressive play decreased. This result is in direct contrast to the findings of Volkamer (1971), who found that as the points differential in matches decreased so to do the level of aggressive acts.

For the unsuccessful teams the plots showed that the majority of their assertive and aggressive behavior occurred when they were more than 22 points behind their opponents, and that as the grew closer or gained the lead in their matches, then they reduced the amount of aggressive and assertive behavior. Results for the unsuccessful teams illustrate that they spent the majority of their games trailing their opposition and therefore are misleading as it is appears they reduced their levels of behavior the closer the scores got, when in fact they just

were not in these positions that often. The result for the successful teams are interesting though, as they suggest that as the teams draw ahead or fall behind by a 2 try or more margin then they reduce the amount of aggressive behavior. It must be considered that the games the successful teams played often were very high scoring and therefore there was ample opportunity to aggress when the margin was above 3 converted tries, yet the results did not indicate this. An explanation could be that players consciously reduced their acts of aggression to avoid being penalized or suspended for an act that in the context of the match was an unnecessary risk. Another possibility is that as the run of play was going their way, there was a decreased need for "tactical aggression", therefore instrumental aggressive acts were not required, resulting in lower total aggression levels.

In summary, these findings indicate that the level of hostile and instrumental aggressive behaviour was not related to performance for teams competing at the 1999 Rugby World Cup Tournament. Aggressive behaviour was also found to be unrelated to the stage of the tournament that teams were competing in, or the period of the game. No differences were found in the levels of hostile and instrumental aggressive behaviour between successful and unsuccessful teams. These results suggest that levels of aggressive behaviour were relatively constant among all teams examined and were not influenced by factors such as time, performance, or competitive level.

Analysis of aggressive behaviour, point's differential, and field position indicated that most acts of aggression occurred in the neutral zone of the field and when scores were close. It was posited that this occurred as the result of learned behaviour aimed at reducing the possible negative affects of aggressive play, such as punitive action from match officials.

Assertive play was found to be positively related to performance, competitive level, and stage of the tournament. It also followed a similar pattern as aggressive behaviour when compared to points differential (i.e. the closer the scores the greater the amount of assertive acts). It can be reasonably concluded that assertive behaviour is seen as the most beneficial type of behaviour and supports the view that playing "hard but fair" is a model for rugby players of all ages, skill, and experience levels.

Implications for coaches

1. As aggression was not related to performance coaches should convey to their players that aggressive behaviour is not necessary for a team to win. Also explain that there is no need for a player to take the role of "enforcer" on a team, and that in fact that player may lead to decreased team performance.
2. Assertive behaviour was positively related to performance and competitive level. Coaches should therefore emphasis to players that if they wish to perform better (win) and advance to higher levels of rugby then they must exhibit strong, hard, forceful play that is within the laws of the game.
3. Assertive play was related to performance during the latter stages of the World Cup Tournament, and therefore should be emphasised in any team which is entering the playoff or elimination rounds of a competition.
4. As aggression is theorised to result from heightened arousal levels, incorporating some arousal control techniques such as relaxation breathing or centering into training may help players maintain physiological and psychological arousal at a beneficial level.

5. Similarly as aggression is also theorised to result from social learning processes, it is important to spot and eliminate aggressive behaviour in youth athletes before they view these behaviours as acceptable and viable methods of achieving game related goals. By reducing the level of aggressive behaviour in youth sports and also decreasing the acceptability of aggressive players as role models, youth players may be less prepared to use aggressive behaviour in their play.
6. Finally, by coaches reducing the level of importance that they place on outcome, players (particularly youths) will be less likely to associate feelings of frustration with losing and therefore be less inclined to display aggressive behaviour resulting from this frustration.

REFERENCES

Aronson, E.A. (1972). The Social Animal. U.S.A: W.H. Freeman & Co.

Bandura, A, & Walters, R.H. (1963). Social Learning and Personality Development. U.S.A: Holt, Rinehart, & Winston Inc.

Baron, R.A. (1977). Human Aggression. New York: Plenum.

Berkowitz, L. (1958). The expression and reduction of hostility. Psychological Bulletin, 55, 257-283.

Berkowitz, L. (1965). The concept of aggressive drive: Some additional considerations. In L. Berkowitz. (Ed.), Advances in experimental social psychology, vol.2, (pp. 301-329). New York: Academic Press.

Berkowitz, L. (1973). Sports, competition, and aggression. In I.D. Williams, & L.M. Wankle (Eds.), Proceedings of the Fourth Canadian Psychomotor Learning and Sport Psychology Symposium (pp. 321-326). Waterloo, Ontario: University of Waterloo.

Berkowitz, L. (1993). Aggression: Its causes, consequences, and control. Philadelphia: Temple University Press.

Blair, S. (1985). Professionalization of attitude towards play in children and adults. Research Quarterly for Exercise and Sport, 56, 82-83.

Bredemeier, B.J. (1978). The assessment of reactive and instrumental athletic aggression. Proceedings of the International Symposium on Psychological Assessment. Neyanya, Israel: Wingate Institute for Physical Education and Sport.

Bredemeier, B.J. (1994). Children's moral reasoning and their assertive, aggressive, and submissive tendencies in sport and daily life. Journal of Sport and Exercise Psychology, 16, 1-14.

Brunelle, J.P., Janelle, C.M., and Tennant, L.K. (1999). Controlling competitive anger among male soccer players. Journal of Applied Sport Psychology, 11, 283-297.

Buss, A.H., & Perry, M. (1992). The aggression questionnaire. Journal of Personality and Social Psychology, 63, 452-459.

Coulomb, G. & Pfister, R. (1998). Aggressive behaviors in soccer as a function of competitive level and time: a field study. Journal of Sport Behavior, 21 No. 2, 222-231.

Cox, R.H. (1998). Sport psychology: concepts and applications, fourth edition. Columbia: WCB/McGraw-Hill.

Dollard, J., Doob, J., Miller, N., Mowrer, O., & Sears, R. (1939). Frustration and Aggression. New Haven, CT: Yale University Press.

Gill, D.L. (1986). Psychological Dynamics of Sport. Champaign, Illinois: Human Kinetics Publishers.

Gladue, B.A. (1991). Qualitative and quantitative sex differences in self-reported aggressive behavior characteristics. Psychological Reports, 68, 675-684.

Goranson, R.E. (1970). Media violence and aggressive behaviour, a review of experimental research. Advances in Social Psychology, 5.

Harrell, W.A. (1980). Aggression by high school basketball players: An observational study of the effects of opponent's aggression and frustration-inducing factors. International Journal of Sport Psychology, 11, 290-298.

Hasegawa, E. (1994). An analysis of anger-related aggression in rugby football competition. Bulletin of Institute of Health and Sports Sciences, University of Tsukuba (Tsukuba, Japan) 17, 69-82.

Husman, B.F., & Silva, J.M. (1984). Aggression in sport: Definitional and theoretical considerations. In, J.M. Silva and R.S. Weinberg (Eds.) Psychological foundations of sport. Champaign, Illinois: Human Kinetics Publishers.

Jones, J.C.H., Ferguson, D.G., & Stewart, K.G. (1993). Blood sports and cherry pie: some economics of violence in the national hockey league. American Journal of Economics and Sociology, 52, No.1, 63-76.

Kelly, B.R., & McCarthy, J.F. (1979). Personality dimensions of aggression: its relationship to time and place of action in hockey. Human Relations, 32, 219-225.

Kerr, J.H., & Kelly, N. (1982). Aggression in women's hockey. Action: British Journal of Physical Education, 13(5), 146.

Lorenz, K. (1966). On Aggression. New York: Harcourt, Brace & World.

McCarthy, J.F., & Kelly, B.R. (1978). Aggressive behavior and its effect on performance overtime in ice hockey athletes: An archival study. International Journal of Sport Psychology, 9, 90-96.

Reid, R.M. (1979). Some behavioral characteristics of rugby and association footballers. International Journal of Sport Psychology 10, (4), 239-251.

Sachs, M.L. (1978). An analysis of aggression in female softball players. Review of Sport and Leisure, 3, 85-97.

Sargent, S. (1948). Reaction to frustration: A critique and hypothesis. Psychological Review, 55 (2), 108.

Silva, J.M. (1980). Understanding aggressive behavior and its effects upon athletic performance. In W.F. Straub (Ed.), Sport Psychology. Ithaca, NY: Movement Publications.

Smith, L.P. (1975) Aggression and athletic performance- A review. In G.G. Watson, & L. Murray (Eds.). PsychoSocial Elements of Play, Games, and Recreation (pp. 75-82). Perth, Australia: University of Western Australia.

Smith, D.C. (1977). An evaluation of aggression in minor hockey players. In B. Kerr, (Ed.). Human Performance and Behavior. Proceedings of the ninth Canadian Psychomotor Learning and Sports Psychology Symposium. Banff, Alberta: University of Calgary.

Smith, M.D. (1978). Hockey Violence: Interring some myths. In W.F. Straub (Ed.), Sport Psychology. Ithaca, NY: Movement Publications.

Smith, M.D. (1983). Violence and Sport. Toronto: Butterworth and Co.

Underwood, G.L. & Whitwood, J.R. (1980). Aggression in sport: A study of an English first division soccer team. Federation internationale d'education physique bulletin, 50 (3/4) Jul/Dec, 31-39.

Volkamer, N. (1971). Investigations into the aggressiveness in competitive social systems. Sportwissenschft, 1, 68-76.

Wankle, L.M. (1973). An examination of illegal aggression in intercollegiate hockey. Proceedings of the Fourth Canadian Psychomotor Learning and Sport Psychology Symposium. Waterloo, Ontario: University of Waterloo.

Widmeyer, W.N., & Birch, J.S. (1979). The relationship between aggression and performance outcome in ice hockey. Canadian Journal of Applied Sport Sciences, 4, 91-94.

Widmeyer, W.N., & Birch, J.S. (1984). Aggression in professional ice hockey: A strategy for success or a reaction to failure? Journal of Psychology, 117 *(1)*, 77-84.

Widmeyer, W.N., & McGuire, E.J. (1997). Frequency of competition and aggression in professional ice hockey. International Journal of Sport Psychology, 28, 57-66.

Worrel, G., & Harris, D.V. (1986). The relationship of perceived and observed aggression of ice hockey players. International Journal of Sport Psychology, 17, 34-40.

VITA

Surname: Brown Given Names: Nicholas James

Place of Birth: Ashburton, New Zealand.

Educational Institutions Attended:

University of Victoria	1998-2000
University of Otago	1994-1997

Degrees Awarded:

B.Ph.Ed (Honours)	University of Otago	1997

PARTIAL COPYRIGHT LICENSE

I hereby grant the right to lend my thesis to users of the University of Victoria Library, and to make single copies only for such users or in response to a request from the Library of any other university, or similar institution, on its behalf or for one of its users. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by me or a member of the University designated by me. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Title of Thesis:

Aggressive and Assertive Behaviors of Elite Rugby Players

Author 

Nicholas James Brown

June 14, 2000.