

To the Graduate Council:

I am submitting herewith a thesis written by Deborah Leigh Edwards entitled "A Comparison of Aggressive Traits Between Female Athletes and Nonathletes, and Between Females in Team Sports as Compared to Females in Individual Sports." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Physical Education.

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A COMPARISON OF AGGRESSIVE TRAITS BETWEEN FEMALE
ATHLETES AND NONATHLETES, AND BETWEEN
FEMALES IN TEAM SPORTS AS COMPARED
TO FEMALES IN INDIVIDUAL SPORTS

A Thesis
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DEDICATED TO
MY LOVING MOTHER AND FATHER
for your confidence, devotion,
and understanding

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D.L.E.

ABSTRACT

The purpose of this study was to compare the aggression of female athletes and nonathletes. A further comparison was made between female athletes participating in team and individual sports and between female nonathletes who preferred either a team or individual sport.

Sixty college females from The University of Tennessee, Knoxville, served as subjects for this study. Teams included in the study were basketball (N = 7), volleyball (N = 8), tennis (N = 5), swimming (N = 5), track and field (N = 5), and nonathletes (N = 30). The subjects were administered the Buss-Durkee Hostility Inventory which was a pencil-paper test. The Buss-Durkee Hostility Inventory was chosen for the testing instrument because it had eight subfactors allowing for more detailed analysis of aggressive behavior.

Data were analyzed by using Two-Way Analysis of Variance. Based on this analysis the following conclusions were made:

1. There was no significant difference found between athletes and nonathletes on total aggression.

2. There was no significant difference found between athletes and nonathletes on any of the eight subfactors.

3. There was a significant difference found at the .05 level between participants in team sports as compared to those participants in individual sports. Team sport

participants were significantly higher than individual sport participants on total aggression, assault, and indirect hostility.

4. There was no significant difference found between participants in team sports and individual sports on any other of the subfactors.

5. There was no significant interaction of participants and type for total aggression.

6. There was no significant interaction of participants and type for any of the subfactors.

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CHAPTER I

INTRODUCTION

There are many different theories of aggression. Some of these suggest that aggression is an innate characteristic of humans as well as animals (Lorenz, 1963; Montagu, 1976; Johnson, 1972,) whereas, contrasting aggression theories maintain that this is a learned characteristic (Scott, 1970; Berkowitz, 1976). Studies by Mead (1963) on tribes in Northeastern New Guinea have given support to the latter view. Mead's studies indicate that, depending on the child rearing practices of a particular tribe, the adults were either extremely cooperative and unaggressive or just the opposite.

In the athletic world, there are also theories of aggression and the relationship of this characteristic to sport. Interestingly enough, these theories also conflict. Some research (Turner, 1969) supports the theory that sport participation as well as sport spectatorship reduces aggression. The contrary view is that these kinds of activities cause and/or increase aggression (Goldstein, Arms, 1971; Russell, 1976).

There has been ample research dealing with the relationship of sport and aggression. One weakness of this

research, however, is that men have been primarily used as subjects. Since women have been given equal opportunity in athletics, it seems appropriate that similar research needs to be done using female subjects. The present study was undertaken because of this need.

I. STATEMENT OF THE PROBLEM

The purpose of this study was to make the following comparisons in regard to aggression as measured by the Buss-Durkee Inventory: (1) female athletes and nonathletes; (2) female athletes participating in individual sports as compared to team sports participants; (3) female nonathletes who prefer team sports as opposed to those who prefer individual sports. There were thirty athletes and thirty nonathletes who served as subject for the investigation. All were students at The University of Tennessee, Knoxville.

II. DEFINITION OF TERMS

The following terms are operationally defined:

Aggression. Aggression is a behavior in which there is intent to injure another.

Athlete. Athlete is a person who participates in competitive athletics twelve or more hours per week.

Individual sport. An individual sport is a sport in which a single individual competes against other single individuals. Representative individual sports used in this study were tennis, swimming, and track and field.

Nonathlete. A nonathlete is a person who has not participated in interscholastic or intercollegiate athletics.

Participants. Participants are those female athletes and nonathletes who were selected as subjects for the study.

Team sport. "Team sport explicitly involves the interplay of supporting or opposing individuals or groups - sometimes both - it cannot be mastered solely by one who completely ignores the others" (Weiss, 1969, p. 56). Representative team sports utilized in this investigation were basketball and volleyball.

The Buss-Durkee Hostility Inventory. The Buss-Durkee Hostility Inventory was designed by Buss and Durkee in 1957 to measure eight subfactors of aggression.

Type. Type is the team or individual sport in which the subject participated as either an athlete or a non-athlete.

III. LIMITATIONS OF THE STUDY

The following factors were considered limitations of this experiment.

1. The study was limited to thirty female college athletes and thirty female college nonathletes at The University of Tennessee, Knoxville.
2. A single measure, the Buss-Durkee Hostility Inventory, was used to measure aggression.
3. Any study which evaluates behavior by means of self-report is influenced by some uncontrollable variables such as the emotional and physical state of the subjects at the time of the testing. None of these factors were controlled in this study.
4. All subjects did not take the test at the same time and under the same environmental conditions.
5. It was impossible to determine whether subjects responded honestly to the inventory.

IV. SIGNIFICANCE OF THE STUDY

There has been much research dealing with aggression. Many of these investigations have dealt with the causes of aggression (Scott, 1970; Lorenz, 1963; Dollard, 1939). Other studies have examined different populations and their aggressive tendencies (Alderman, 1974; Smith, 1972;

Peterson, 1967; Malumphy, 1968). The present study was concerned with the latter area of investigation. Specifically, the study compared female athletes and nonathletes at The University of Tennessee in regard to aggression. A further comparison was made between female team sport members and members of individual sports. Although there have been studies dealing with this topic reported in the literature (Wood, 1971; Figler, 1976; Alderman 1974; Carter, 1969), men have been used as subjects. Therefore, it would seem that this topic needs further research.

CHAPTER II

REVIEW OF THE LITERATURE

There are several theories of aggression just as there are several theories dealing with the effect of physical activity and sport on aggressive tendencies. This chapter will be concerned with a discussion of selected theories pertinent to both topics. In addition, the final section of the chapter will deal with related research regarding sport and aggression.

I. THEORIES OF AGGRESSION

The aggressive theorists selected for discussion are Lorenz, Freud, Montagu, Dollard, and Berkowitz. Lorenz and Freud belong to the instinctive school of aggression whereas, Montagu, Dollard and Berkowitz believe aggression is a learned behavior. Further discussion of the differences in these theories follows.

Aggression, as described by Lorenz (1963), is the fighting instinct in beast and man against members of the same species. The Instinct Theory of human aggression is that innate behavior fed by an ever flowing fountain or energy. An element of this theory is that animals as well as men are innately endowed with aggression. This

aggression is necessary for the survival of the individual and the species.

Those who believed in the Instinctive Theory concluded that there should be more vigorous activity to allow aggressive behavior. This theory suggests that aggression may be channeled to socially accepted behavior, but it can never be abolished because aggression is inborn, innate in humans (Martens, 1975).

Most of Lorenz's studies of aggression were done on animals as subjects. He believes that there are similarities of animal aggression and human aggression. He argues that aggression is the fighting instinct in both animals and humans and is not necessarily destructive but can be if used improperly. He suggests that this aggression needs a proper outlet in order to avoid self-destruction (Lorenz, 1963).

Freud's concept of aggression was also that aggression was innate (Fromm, 1973; Coakley, 1978). However, this differs from Lorenz in that Freud's theory deals with the death instinct. For Freud, the death instinct, was a biological force in all living organisms. Freud argued, like Lorenz, that failure to exhibit aggressive behavior in activity would be unhealthy. According to Freud, aggression causes violence against oneself, resulting in suicide. He believed in the catharsis hypothesis, which

is literally a cleansing of the emotions, the process of purging of drive or energy resulting in lessened arousal, the "draining off." Freud's theory further suggests that aggressive behavior has a beneficial effect in reducing tension or anger and in eliminating or reducing tension or anger and in eliminating or reducing subsequent aggression.

An alternative to the instinctive view of aggression is the social learning position. According to Montagu (1976), human behavior is socially learned. Everything a human being does is learned from observing other human beings, and therefore, reinforcement plays a large role in the social learning theory. In regard to aggression, reinforcement would greatly increase the probability of aggression occurring under similar situations. According to Montagu, aggressive learning is part of the socialization process and parents and peers play important roles.

Dollard (1939) viewed aggression differently from the previous researchers but not in terms of its social origin. He believed that aggression is caused by frustration or blockage of goal directed activity. He believed that the stronger the instigated goal response, which is frustration, the more intense the aggression. Dollard maintained that aggression is a drive that once aroused, must have an outlet.

According to Berkowitz (1973; 1976) reinforcing one class of aggressive response can increase the likelihood of another kind of aggressive response. Berkowitz believes that more than one source can account for aggression. His belief is that aggression may occur for one or more of at least three reasons:

1. learning aggressive frustration of goal directed behavior.
2. learning aggressive behavior to certain stimuli.
3. pain.

Berkowitz disagreed with Dollard in that he felt that frustration does not directly lead to aggression. For aggression to occur as a consequence of frustration, two things must occur:

1. the frustration must give rise to an emotional readiness to be aggressive (anger).
2. the emotional readiness must exist in a situation that contains stimulus cues that are linked with aggressive behavior by the person.

There are two different types of aggression in humans. These are reactive aggression and instrumental aggression. Reactive aggression is a goal-response, which is initiated or retaliatory intent to injure a person or group of persons. The major reinforcer is the stimulus of the victim suffering injury or being in pain. Anger is usually

involved and injury is the anticipated outcome (Martens, 1975; Fisher, 1976).

Instrumental aggression is an attack in which the primary goal is not injury to the enemy, but attainment of a reward. This aggression does not involve anger, and is not a response to frustration. The major reinforcer is a reward of some sort (Martens, 1975; Fisher, 1976).

II. AGGRESSION AND SPORT

There are two opposing views relating to the effect of sport on aggression. One view supports Lorenz's theory and the other Berkowitz's theory.

According to Lorenz, sport provides an outlet for aggression. He also suggests that some animals learn to control harmful aggression through the medium of play and he maintains that sport performs a similar function for humans. He recommends sporting contests of every kind between nations as outlets for their collective militant enthusiasm (Lorenz, 1963).

If sport is an outlet for tension, it is assumed that every participant will be satisfied by the outcome. Through games and sports, there is a training ground for the control of aggression. Scott (1970) maintains that sport may be used to develop in people habits of peaceful

and enjoyable activities, which prevents destruction and violent behavior and teaches them some of the rules of living in a group.

One hypothesis for the beneficial effect of sport on aggression is the catharsis effect. This effect refers to any agent which reduces aggressive tendencies and permits these tendencies to be expressed by socially acceptable means (Turner, 1969). If the catharsis hypothesis is true, and if aggressive energy can be released into substitute activity such as athletics then man's inhumanity to man might be lessened (Fisher, 1976).

On the other hand, competitive situations may provide a stimulus for aggression, particularly if the results of the contest are essential. Research indicates that sport may be a stimulus to aggression rather than an outlet (Berkowitz, 1973). Aggressive behavior on the part of the player would occur most often in sport activities where the following conditions are present:

1. anger is a likely response to the frustration.
2. frustration is highly associated with the action.

If frustration does occur, it may be directed towards oneself rather than another player (Berkowitz, 1976a). It is not unusual for athletes to inflict harm upon themselves (Fisher, 1976).

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If a player plays aggressively (high motivation) he/she is called aggressive and many of his/her acts done with intense physical effort are interpreted as acts of aggression. In sport, competition between two persons provides not only opportunity for aggression by one opponent, but counter aggression by the other opponent (Martens, 1975). In many of the contact sports, aggressive behavior is used to intimidate opponents, whereas, with noncontact sports, when aggression does occur, it is obviously outside of the normal action of the game (Coakley, 1978).

Sport is considered as that human activity which permits free and harmless manifestations of aggression (Layman, 1970). Sport is instrumental aggression, the primary goal is not injury but a reward. Athletes who are aggressive in their sport are rewarded, praised, and reinforced for their aggression (Alderman, 1974). However, people who are aggressive in sports may or may not be aggressive in other nonathletic situations (Alderman, 1974).

Insofar as women are concerned, female sport competitors have been subjects of social controversy. The demands and presumed effects of the sport experience are clearly unfeminine in traditional terms (Small, 1973). The male competitor is slightly freer to express his natural aggressive tendencies with a high need to affiliate

with others (Singer, 1972). On the other hand, the female who is both aggressive on and off the court, finds herself being rewarded on the athletic field and negatively rewarded in other spheres of life (Neal & Tutko, 1975).

III. RESEARCH ON AGGRESSION IN SPORT

In this section of the review of the literature, the studies being discussed will be divided into two sections. Section one will consist of those studies dealing with male athletes. The second section will be concerned with studies investigating aggressive responses and tendencies of female sport participants.

Male Athletes and Aggression

Several studies have been conducted which investigated the effects of participation in violent sport on aggressive tendencies (Johnson and Hutton, 1955; Russell, 1976). In one such study by Johnson and Hutton (1955) the researchers administered the House-Tree-Person Test to view how participation in a violent sport affects the dynamics of personality. Wrestling was chosen because of its combative nature and emotional stress. The wrestlers were tested according to the following schedule: (1) three weeks prior to the first intercollegiate match, (2) four to five hours prior to the first intercollegiate match, and (3) the

morning after the first match. Under all conditions, it was found that aggressive feelings were more in evidence. However, subjects showed an increased tendency to hold these feelings within strict controls and to direct them inward rather than against a person or thing in the environment. Additional findings were that in condition three, aggressive feelings were greatly reduced whereas, condition one subjects were described as evidencing a greater degree of aggression.

Other sport and aggression studies have focused on what effect spectatorship has on aggression. Goldstein and Arms (1971) administered the Buss-Durkee Hostility Inventory to observers of the 1969 Army-Navy football game and the Army-Temple gymnastics meet during the same months. The purpose was to determine which activity would elicit more aggressive responses. The results of the study found subjects were significantly more hostile after observing the football game than after observing the gymnastics meet. They speculated there was an increase in hostility due to the nature of the observed event. The authors concluded that watching an aggressive sport leads to an increase in hostility among spectators.

Russell (1976) conducted a study concerning competitive aspects of aggression in ice hockey. The measure used was

a combined index subsuming both physical aggression and that behavior which challenges the authority of game officials. The subjects were all males and the records of six teams were used. Russell found that levels of aggression increased significantly throughout the course of the game. Although aggression did not increase over the season it was significantly related to the standings in the league. However, frequency of aggressive behavior was significantly related to the existing and game score.

Other type of sport and aggression studies compared athletes with nonathletes. One such study was by Husman (1955). Husman used the projective techniques of the Rosenzweig Picture-Frustration test, selected Thematic Apperception cards, and a sentence completion test to view aggression. He administered these projective tests to nine boxers, eight wrestlers, nine runners, and seven nonathletes. The findings revealed that boxers were the least aggressive of the four groups. They seemed to direct their aggressive feelings inward upon themselves rather than projecting them outwardly onto others. The study showed that athletics tended to decrease the aggressiveness of the athletes.

Carter (1969) conducted a study of aggressiveness in athletes and nonathletes in church-related and non-church-related colleges and universities. The results

showed significant differences between athletes and nonathletes. Athletes were more aggressive than nonathletes. The athletes attending the church-related colleges were significantly less aggressive than those athletes enrolled in a nonchurch-related school.

Taylor's (1973) purpose was to compare the aggressive response of high and low skilled male basketball competitors of two age levels. There were 491 subjects from the ages of 11 to 13 years old, and 14 to 16 years. The measurement used was the Rosenzweig Picture-Frustration test. According to Taylor's findings there was no significant difference in aggression between high and low skilled basketball competitors of two age levels. However, the low skilled individual scored above the high skilled competitor on aggressive feelings toward the environment. On the other hand, skilled players had more aggressive feelings about themselves.

Figler (1976) administered the Rosenzweig Picture-Frustration test to 377 males and females from the junior and senior classes at two public high schools. The concern of this study was aggressive response to frustration from four categories: (1) reactive aggressiveness of all subjects, (2) instrumental aggressiveness of all subjects, (3) the contact factor among male athletes, and (4) the

contact factor among female athletes. The findings of his study were: male athletes were significantly less instrumentally aggressive than female athletes; male athletes were also less instrumentally aggressive than male nonathletes; there were significant differences in that female athletes were more instrumentally aggressive in response to nonsports frustrations than nonathletes.

Female Sport Aggression

As the previous section has indicated, many of the studies dealing with athletes and nonathletes on aggressiveness have been done with males. However, there are several studies dealing with females. The studies that will be discussed in this section will be concerned with self perception of female athletes, athletes versus nonathletes concerning aggressive tendencies, and aggressiveness of females involved in team and individual sports.

Rector (1972) was concerned with the self-perceptions of the female athlete in social and competitive situations. The testing instrument used was the Adjective Check List by Grough and Heilbrum. The subjects were 63 female college athletes who were members of varsity or junior varsity individual sport teams. These teams were riflery, bowling, golf, swimming, gymnastics, fencing, and tennis. The results of Rector's studies were: athletes differed

from the norms on several personality traits such as greater psychological endurance, possessed greater need for high achievement, high dominance, and high aggression. Athletes were more competitive and aggressive than non-athletes. With the desire to win, the athlete pictured herself as becoming more aggressive. However, there were no significant differences between experienced and inexperienced competitors on the self reports for traits of aggression, achievement, dominance, and endurance.

Finn (1976) utilized the element of viewing sport films for aggression. The instrument used was the Buss-Durkee Hostility Inventory which was administered to 60 athletes and 60 nonathletes. The two groups were divided into four subgroups: (1) 30 high hostile athletes, (2) 30 low hostile athletes, (3) 30 high hostile nonathletes, and (4) 30 low hostile nonathletes. The groups were assigned to one of two experimental film groups or control groups. The results of Finn's study were that the perception of violence did not differ between (1) athletes and nonathletes, (2) high and low hostile women, and (3) subjects who viewed aggressive or nonaggressive treatment films or no films.

Laird (1970) compared the aggressive responses among and between women athletes and nonathletes on three educational levels. Among the results she reported the

following: (1) no significant difference between athletes and nonathletes; and (2) nonathletes tended to direct their aggression toward the environment more than did the athlete, and (3) the athletes directed their aggressiveness toward themselves.

Peterson, Weber, and Trousdale (1967) studied superior women athletes selected from AAU and the United States Olympic teams. Thirty-eight women were chosen who competed in swimming, diving, riding, fencing, canoeing, gymnastics and track and field. In addition, 59 women were selected who had competed on the women's volleyball and basketball teams. The measurement used was the Cattell Sixteen Personality Factor Questionnaire. The authors found that females who engaged in individual sports were more aggressive than team sport participants.

IV. SUMMARY

To briefly summarize, aggression is categorized in either of two basic theories: (1) the instinctive theory which states that aggression is an inborn, innate characteristic of all humans; or (2) the learned theory which stipulates that aggression is adapted through the actions of others and the environment.

In regard to the research cited in this chapter there is conflicting evidence regarding the effect of sport

and aggression. The effect may be either negative or positive depending on the individual. Evidence was also cited which supported the concept that viewing a football game may increase hostility among the spectators.

The research with females indicated that there are aggressive differences between team and individual athletes and between athletes and nonathletes. These research findings were found to be also conflicting. Therefore, more research would appear to be needed in the area of female athlete and nonathlete.

CHAPTER III

PROCEDURE

The procedures used in this investigation were organized as follows: (a) the selection of subjects, (b) the testing instrument, (c) the test administration, and (d) treatment of the data.

I. SELECTION OF SUBJECTS

All subjects were female students at The University of Tennessee, Knoxville during Spring quarter, 1980. The thirty athletes were from the team sports of volleyball and basketball, and from the individual sports of tennis, swimming, and track and field. The thirty nonathletes were volunteers from the service classes in physical education.

The athletes were selected in the following manner. All eight members of the volleyball team were used in the study. From the basketball team, seven members out of ten participated. The remaining basketball team members were not available for testing. The subjects from swimming consisted of five individuals, all of whom volunteered. All six members of the tennis team took the inventory, but only five players were treated in the data. The

subjects were all numbered and then five numbers were drawn at random. The track and field athletes were selected by drawing names from a hat. Using this method, four athletes in track and four in field events were chosen. Of these, five actually participated in the study. This was determined by issuing numbers and then withdrawing the number of subjects needed.

The nonathletes were volunteers from the basic physical education classes. The classes that were selected were tennis, racquetball, and figure and weight control. Of the 42 subjects only 30 were used for the actual study. The random selection process that was used were numbers given to each subject and then the numbers were drawn to determine what subjects were used.

Only those individuals who had given their consent to take the aggression test were included in the investigation. A copy of the consent form may be found in Appendix B.

II. THE TESTING INSTRUMENT

The test which was used was a pencil-paper test, the Buss-Durkee Hostility Inventory (Appendix C). The Buss-Durkee Hostility Inventory was used because it has eight subfactors allowing for more detailed analysis of

aggressive behavior. The following subfactors were observed (Buss & Durkee, 1957):

Assault - (A) - physical violence against others. This included getting into fights with others but not destroying objects.

Indirect Hostility - (IH) - both roundabout and undirected aggression. Roundabout behavior like malicious gossip or practical jokes is indirect in the sense that the hated person is not attacked directly but by devious means. Undirected aggression, such as temper tantrums and slamming doors, consists of a discharge of negative affect against no one in particular; it is a diffuse rage reaction that has no direction.

Irritability - (IR) - a readiness to explode with negative affect at the slightest provocation. This includes quick temper, grouchiness, exasperation, and rudeness.

Negativism - (N) - Oppositional behavior, usually directed against authority. This involves a refusal to cooperate that may vary from passive noncompliance to open rebellion against rules or conventions.

Resentment - (R) - jealousy and hatred of others. This refers to a feeling of anger at the world over real or fantasied mistreatment.

Suspicion - (S) - projection of hostility onto others. This varies from merely being distrustful and wary of people to beliefs that others are being derogatory or are planning harm.

Verbal Hostility - (VH) - negative affect expressed in both the style and content of speech. Style includes arguing, shouting, and screaming; content includes threats, curses, and being over-critical.

Guilt - (G) - feelings of being bad, having done wrong, or suffering pangs of conscience.

The subfactors cluster in two groups when factor analyzed, an "attitudinal component of hostility resentment, suspicion, and guilt, and a motor component assault,

indirect hostility, negativism, irritability, and verbal hostility . . . involving various aggressive behaviors" (Buss & Durkee, 1957).

The Buss-Durkee Hostility Inventory (Buss et al., 1957) was comprised of 75 questions evaluating the eight subfactors. Of the 75 true-false questions, 60 were designed so that true answers indicate aggressive tendencies while 15 were designed so that false answers indicate aggressive tendencies.

III. THE TEST ADMINISTRATION

Since it was not feasible to administer the test to all teams at one time, a testing time for each team was arranged with the help of the coaches. However, it was rather difficult to administer the test on the same day and during the same time of day. Careful consideration was taken with the sports that were still in-season. The administering of the test was not given prior to or just after a competitive event. Instead of writing names on answer sheets, athletes were instructed to give the name of the sport in which they participated.

Nonathletes were administered the test at night. Thirty minute time periods were arranged for the administering of the test. Several nights were used to make it

convenient for the participants. The nonathletes were instructed to indicate on the answer sheet whether they preferred a team sport or an individual sport and were asked to omit their names.

The investigator administered the Buss-Durkee Hostility Inventory to each group of subjects. The investigator explained the study as being a survey to determine aggressive attitudes in athletes and nonathletes, and to determine aggressive attitudes between athletes and nonathletes in terms of team sports and individual sports.

At the start of each meeting, consent forms were read and signed by each individual. The experimenter assured all subjects that the results would be anonymous. The test was explained as being a pencil-paper test which consisted of 75 true-false questions. The experimenter explained the importance of answering the questions as honestly as possible and the importance of answering all the questions. It was explained to all subjects that they had the privilege of withdrawing their consent at anytime prior to the administration of the Inventory. The experimenter asked for further questions and the subjects were instructed to begin the test.

IV. TREATMENT OF THE DATA

This study was concerned with the following comparisons regarding aggressive tendencies as measured by the Buss-Durkee Hostility Inventory: (a) difference between female athletes and nonathletes; (b) difference between female athletes participating in team sports as compared to those who participated in individual sports; and (c) difference between female nonathletes whose preference was either team or individual sports. The statistical design chosen to make these comparisons was a Two-Way Analysis of Variance.

CHAPTER IV

ANALYSIS OF THE DATA

The purpose of this study was to investigate aggression of female athletes and nonathletes. Further comparisons were made between female athletes participating in team sports versus individual sports and between female nonathletes who preferred a team sport as opposed to those who preferred individual sports. The instrument used to measure aggression was the Buss-Durkee Hostility Inventory.

Sixty subjects, half of whom were female athletes and half of whom were female nonathletes, participated in the study. These groups were further divided into 15 athletes who participated in team sports and 15 athletes who participated in individual sports. The other half was divided into 15 nonathletes who preferred team sports and 15 nonathletes who preferred individual sports.

The purpose of this chapter is to present the statistical treatment of the data and a discussion of the findings.

I. STATISTICAL TREATMENT OF THE DATA

The raw data for all subjects on the Buss-Durkee Hostility Inventory were tabulated for total aggression

and for the eight subfactors. The raw data may be found in Appendix A.

As revealed in Table I, there was a significant difference between team sport and individual sport participants on Total Aggression at the .05 level. Team sport participants ($\bar{M} = 35.53, s = 10.89$) were significantly higher than individual sport participants ($\bar{M} = 29.90, s = 7.03$). However, there were no significant differences between athletes and nonathletes on Total Aggression as measured by the Inventory.

A Two-Way ANOVA was run on the eight subfactors of aggression as measured by the Buss-Durkee Hostility Inventory. On eight subfactors there were no significant differences between athletes and nonathletes (Assault, Table II; Indirect Hostility, Table III; Irritability, Table IV; Negativism, Table V; Resentment, Table VI; Suspicion, Table VII; Verbal Hostility, Table VIII; and Guilt, Table IX). However, the nonathletes who preferred and the athletes who participated in team sports ($\bar{M} = 3.97, s = 2.40$) were significantly higher on the subfactor Assault at the .05 level (Table II) than were the nonathletes and athletes in individual sports ($\bar{M} = 1.93, s = 1.60$). Also, the nonathletes who preferred and the athletes participating in team sports ($\bar{M} = 5.70, s = 1.98$) were significantly higher on the subfactor Indirect Hostility

TABLE I
ANALYSIS OF VARIANCE OF MEAN SCORES
FOR TOTAL AGGRESSION

Source	Sum of Squares	df	Mean Squares	F Value	p Value
Participants	16.02	1	16.02	.19	.6680
Type	476.02	1	476.02	5.53	.0223*
Athlete*Type	33.75	1	33.75	.39	.5339
Error	4824.40	56	86.15		
Total	5350.18	59			

*Significant at .05 level

TABLE II
ANALYSIS OF VARIANCE OF MEAN SCORES
FOR THE SUBFACTOR ASSAULT

Source	Sum of Squares	df	Mean Square	F Value	p Value
Participants	10.41	1	10.41	2.53	.1171
Type	62.01	1	62.01	15.08	.0003*
Athlete*Type	0.15	1	0.15	0.04	.8492
Error	230.27	56	4.11		
Total	302.85	59			

*Significant at .05 level

TABLE III
ANALYSIS OF VARIANCE OF MEAN SCORES FOR
THE SUBFACTOR INDIRECT HOSTILITY

Source	Sum of Squares	df	Mean Square	F Value	p Value
Participants	1.35	1	1.35	.39	.5367
Type	16.02	1	16.02	4.59	.0366*
Athlete*Type	0.02	1	.02	.00	.9452
Error	195.60	56	3.49		
Total	212.98	59			

*Significant at .05 level

TABLE IV
ANALYSIS OF VARIANCE OF MEAN SCORES FOR
THE SUBFACTOR IRRITABILITY

Source	Sum of Squares	df	Mean Square	F Value	p Value
Participants	.02	1	.02	.00	.9514
Type	1.35	1	1.35	.30	.5836
Athlete*Type	2.81	1	2.81	.63	.4291
Error	248.67	56	4.44		
Total	252.85	59			

*Significant at .05 level

TABLE V
ANALYSIS OF VARIANCE OF MEAN SCORES FOR
THE SUBFACTOR NEGATIVISM

Source	Sum of Squares	df	Mean Square	F Value	p Value
Participants	.42	1	.42	.25	.6163
Type	2.02	1	2.02	1.23	.2723
Athlete*Type	1.35	1	1.35	.82	.3682
Error	91.87	56	1.64		
Total	95.65	59			

*Significant at .05 level

TABLE VI
ANALYSIS OF VARIANCE OF MEAN SCORES FOR
THE SUBFACTOR RESENTMENT

Source	Sum of Squares	df	Mean Square	F Value	p Value
Participants	.07	1	.07	.02	.8793
Type	1.67	1	1.67	.58	.4488
Athlete*Type	.60	1	.60	.21	.6489
Error	160.40	56	2.87		
Total	162.73	59			

*Significant at .05 level

TABLE VII
ANALYSIS OF VARIANCE OF MEAN SCORES FOR
THE SUBFACTOR SUSPICION

Source	Sum of Squares	df	Mean Square	F Value	p Value
Participants	8.07	1	8.07	1.84	.1799
Type	8.07	1	8.07	1.84	.1799
Athlete*Type	6.67	1	6.67	1.52	.2221
Error	244.93	56	4.38		
Total	267.73	59			

*Significant at .05 level

TABLE VIII
ANALYSIS OF VARIANCE OF MEAN SCORES FOR
THE SUBFACTOR VERBAL HOSTILITY

Source	Sum of Squares	df	Mean Square	F Value	p Value
Participants	5.40	1	5.40	.88	.3511
Type	9.60	1	9.60	1.57	.2151
Athlete*Type	0.00	1	0.00	.00	1.0000
Error	342.00	56	6.11		
Total	357.00	59			

*Significant at .05 level

TABLE IX
ANALYSIS OF VARIANCE OF MEAN SCORES FOR
THE SUBFACTOR GUILT

Source	Sum of Squares	df	Mean Square	F Value	p Value
Participants	7.35	1	7.35	7.35	.1978
Type	0.02	1	0.02	0.00	.9507
Athlete*Type	0.02	1	0.02	0.00	.9507
Error	242.27	56	4.32		
Total	249.65	59			

*Significant at .05 level

at the .05 level (Table III) than the nonathletes who preferred and the athletes who participated in individual sports ($\underline{M} = 4.67$, $\underline{s} = 1.69$). However, the remaining subfactors showed no significant differences of aggression between team and individual sports (Tables IV-IX). There were no significant interaction of athlete status X type for any of the subfactors.

II. DISCUSSION OF THE FINDINGS

The results as measured by the Buss-Durkee Hostility Inventory indicated that athletes and nonathletes were not significantly different in regard to aggression. However, there were significant differences between participants of team sports and individual sports on Total Aggression, and on the subfactors of Assault, and Indirect Hostility. Team sport participants were significantly higher than individual sport participants. There were no significant differences between team and individual sport participants on the remaining subfactors. There were no significant interactions of participants X type for any of the subfactors.

The results of this study support Laird's (1970) study which found that there were no significant differences between female athletes and nonathletes in regard to aggression at three educational levels. The Rosenzweig

Picture-Frustration Test was used to measure aggression in the Laird study.

However, the results of this study conflict with Peterson, Weber, and Trousdale (1967). In their study, dealing with female athletes selected from AAU and United States Olympic Teams, it was found that female individual sport participants were more aggressive than female team sport participants. However, the Cattell Sixteen Personality Factor Questionnaire was used for their study. The present study, as has been discussed, found just the opposite. Suggested reasons for these findings could be that team sport participants are more physically violent against others than individual sport participants and that team sport participants could be subject to temper tantrums, slamming doors, and practical jokes more than individual sport participants.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

The purpose of this study was to compare the aggressive tendencies of female athletes and nonathletes. Further comparisons were made between athletes participating in team and individual sports and between nonathletes whose preference was either a team or individual sport.

Sixty college females at The University of Tennessee, Knoxville, served as subjects for this study. Teams included were basketball (N = 7), volleyball (N = 8), tennis (N = 5), swimming (N = 5), and track and field (N = 5), and nonathletes (N = 30). The subjects were administered the Buss-Durkee Hostility Inventory which was a pencil-paper test.

The statistical technique used to make within and between group comparisons of the mean scores was the 2×2 analysis of variance. According to the evidence found in this study, there was no statistically significant difference in the score for total aggression or eight subfactors between athletes and nonathletes. There were, however, significant differences between participants in team and individual sports on the dependent variables of

Total Aggression, Assault, and Indirect Aggression. Team sport participants were significantly higher than individual sport participants. There were no significant differences on any other subfactor between athletes participating in team and individual sports. There was no significant interaction of participants and type for total aggression. There were no significant interaction of participants and type for any of the subfactors.

II. CONCLUSIONS

The results of this study indicate that the following conclusions may be made:

1. There was no statistically significant difference between athletes and nonathletes on total aggression as measured by the Buss-Durkee Hostility Inventory.
2. There was no significant difference between athletes and nonathletes on the eight subfactors of aggression.
3. There was a significant difference between participants of team sports and participants of individual sports on Total Aggression, with the former scoring higher.
4. There was a significant difference between participants of team sports and participants of individual sports on Assault, Indirect Hostility, with the former scoring higher.

5. There were no significant differences between team sport participants and individual sport participants on any other subfactor.

6. There was no significant interaction of participant and type for total aggression.

7. There was no significant interaction of participant and type for any other subfactor.

III. RECOMMENDATIONS

As a result of this study, the following recommendations may be made:

1. There should be further studies concerning the causes of aggression.

2. There should be a comparison study utilizing males and females.

3. There should be similar studies using different instruments to measure aggression.

4. There should be similar studies investigating aggression in team sports with emphasis on different positions within a team.

5. There should be studies conducted to determine whether athletes display more aggressive tendencies when their sport is in season or out of season.

6. There should be studies to determine factors which reduce aggression in sport.

7. Further study of female aggression as a function of changing cultural values and norms is needed.

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APPENDICES

APPENDIX A

RAW DATA FOR ALL SUBJECTS

TABLE X

RAW DATA FOR ALL SUBJECTS

Subjects	Group	Athlete	Type	Total	A	IH	IR	N	R	S	VH	G
1	Volleyball	yes	Team	20	3	4	4	2	0	1	4	2
2	Volleyball	yes	Team	9	1	1	0	1	0	1	3	2
3	Volleyball	yes	Team	27	0	5	6	2	2	2	6	4
4	Volleyball	yes	Team	48	8	9	6	4	1	5	8	7
5	Volleyball	yes	Team	41	1	5	3	2	7	6	9	8
6	Volleyball	yes	Team	41	7	3	4	5	5	5	10	2
7	Volleyball	yes	Team	28	1	8	6	2	3	1	2	5
8	Volleyball	yes	Team	28	3	6	6	1	1	1	9	1
9	Basketball	yes	Team	46	3	9	8	4	3	6	6	7
10	Basketball	yes	Team	41	5	8	7	1	3	2	8	7
11	Basketball	yes	Team	29	3	3	7	2	4	4	3	3
12	Basketball	yes	Team	56	8	9	10	4	4	8	10	3
13	Basketball	yes	Team	39	1	7	6	4	4	7	8	2
14	Basketball	yes	Team	28	4	4	4	2	1	4	4	5
15	Basketball	yes	Team	33	6	7	5	1	1	2	9	2
16	Track/Field	yes	Individual	33	2	5	7	3	1	3	7	5
17	Track/Field	yes	Individual	30	0	3	7	2	3	6	6	3
18	Track/Field	yes	Individual	38	4	7	7	2	2	5	6	5
19	Track/Field	yes	Individual	35	1	6	4	3	5	6	3	7
20	Track/Field	yes	Individual	27	1	1	5	1	4	4	4	7
21	Tennis	yes	Individual	33	3	6	7	4	2	4	5	2
22	Tennis	yes	Individual	28	1	3	5	3	1	3	7	5
23	Tennis	yes	Individual	30	2	6	4	2	2	3	5	6
24	Tennis	yes	Individual	27	2	6	4	2	4	4	4	1
25	Tennis	yes	Individual	38	0	6	7	5	3	5	7	5

TABLE X (continued)

Subjects	Group	Athlete	Type	Total	A	IH	IR	N	R	S	VH	G
26	Swimming	yes	Individual	31	3	7	5	0	2	2	8	4
27	Swimming	yes	Individual	22	0	3	7	2	1	0	8	1
28	Swimming	yes	Individual	20	1	4	4	1	2	1	5	2
29	Swimming	yes	Individual	36	0	5	6	3	3	5	8	6
30	Swimming	yes	Individual	24	2	4	5	3	2	3	4	1
31	Team	no	Team	44	8	5	6	3	4	7	6	5
32	Team	no	Team	41	4	6	6	5	3	4	6	7
33	Team	no	Team	39	6	7	8	3	2	4	6	5
34	Team	no	Team	37	3	5	6	1	5	3	7	6
35	Team	no	Team	46	7	6	7	3	4	5	7	7
36	Team	no	Team	32	4	6	2	2	0	2	10	6
37	Team	no	Team	25	0	2	2	3	5	4	5	4
38	Team	no	Team	37	5	4	8	1	4	3	8	4
39	Team	no	Team	39	5	7	5	4	2	4	9	3
40	Team	no	Team	28	3	6	5	3	2	0	5	4
41	Team	no	Team	53	5	7	10	4	3	8	9	7
42	Team	no	Team	39	3	6	8	2	2	3	10	5
43	Team	no	Team	16	2	5	3	1	1	1	1	2
44	Team	no	Team	26	3	5	5	3	1	1	6	2
45	Team	no	Team	50	7	6	8	1	6	7	11	4
46	Individual	no	Individual	26	0	6	4	1	1	1	9	4
47	Individual	no	Individual	39	2	6	6	4	3	5	7	6
48	Individual	no	Individual	46	3	6	8	3	5	2	11	8
49	Individual	no	Individual	16	0	2	5	3	1	1	2	2
50	Individual	no	Individual	31	6	2	3	3	1	6	8	2
51	Individual	no	Individual	27	4	4	5	1	1	2	4	6
52	Individual	no	Individual	24	2	4	6	1	2	1	4	4
53	Individual	no	Individual	38	3	5	7	3	3	4	6	7
54	Individual	no	Individual	26	5	5	3	1	1	1	4	6
55	Individual	no	Individual	15	1	3	0	1	0	0	5	5

TABLE X (continued)

Subjects	Group	Athletes	Type	Total	A	IH	IR	N	R	S	VH	G
56	Individual	no	Individual	27	4	3	4	1	3	2	7	3
57	Individual	no	Individual	39	3	5	7	4	3	2	7	8
58	Individual	no	Individual	28	1	3	8	0	6	4	3	3
59	Individual	no	Individual	30	1	7	4	2	4	2	8	2
60	Individual	no	Individual	33	1	7	8	1	1	0	11	4

A - Assault
 IH - Indirect Hostility
 IR - Irritability
 N - Negativism
 R - Resentment
 S - Suspicion
 VH - Verbal Hostility
 G - Guilt

APPENDIX B

CONSENT FORM

Consent Form

I, _____ hereby volunteer to participate in research study examining aggressive tendencies.

I understand that my participation in this study involves taking the Buss-Durkee Hostility Inventory, which is a pencil-paper test lasting approximately 30 to 45 minutes. The test will consist of answering 75 True/False questions and I understand the importance of answering these questions as honestly as possible.

Other details of the project have been explained and I have had an opportunity to have my questions answered. Should I have further questions I have been told that I may expect to have them answered by the experimenter before continuing participation. I have been told that I am free to withdraw my consent and to discontinue participation in the project at any time without penalty. In addition, I understand that all my responses and scores will remain completely confidential.

Date: _____ Signature: _____

Project Director: Debbie L. Edwards

Home Address: 7236 Winchester
Knoxville, TN 37919

Home Phone: 690-5643

Office Number: 350 HPER Building

Office Phone: 974-5111

APPENDIX C

BUSS-DURKEE HOSTILITY INVENTORY

BUSS-DURKEE HOSTILITY INVENTORY

DIRECTIONS: Read each of the items below carefully. Check either the TRUE or FALSE response as it applies to you as an individual. There are no wrong answers.

TRUE FALSE

1. () () I seldom strike back, even if someone hits me first.
2. () () I sometimes spread gossip about people I don't like.
3. () () Unless somebody asks me in a nice way, I won't do what they want.
4. () () I lose my temper easily but get over it quickly.
5. () () I don't seem to get what's coming to me.
6. () () I know that people tend to talk about me behind my back.
7. () () When I disapprove of my friends' behavior, I let them know it.
8. () () The few times I have cheated, I have suffered unbearable feelings of remorse.
9. () () Once in a while I cannot control my urge to harm others.
10. () () I never get mad enough to throw things.
11. () () Other people always seem to get the breaks.
12. () () Sometimes people bother me just by being around.
13. () () When someone makes a rule I don't like, I am tempted to break it.
14. () () I tend to be on my guard with people who are somewhat more friendly than I expect.

TRUE FALSE

15. () () I often find myself disagreeing with people.
16. () () I sometimes have bad thoughts which make me feel ashamed of myself.
17. () () I can think of no good reason for ever hitting anyone.
18. () () When I am angry, I sometimes sulk.
19. () () When someone is bossy, I do the opposite of what he asks.
20. () () I am irritated a great deal more than people are aware of.
21. () () I don't know any people that I downright hate.
22. () () There are a number of people who seem to dislike me very much.
23. () () I can't help getting into arguments when people disagree with me.
24. () () People who shirk on the job must feel very guilty.
25. () () If someone hits me first, I let him have it.
26. () () When I am mad, I sometimes slam doors.
27. () () I am always patient with others.
28. () () Occasionally when I am mad at someone I will give him the "silent treatment."
29. () () When I look back on what's happened to me, I can't help feeling mildly resentful.
30. () () There are a number of people who seem to be jealous of me.
31. () () I demand that people respect my rights.

TRUE FALSE

32. () () It depresses me that I did not do more for my parents.
33. () () Whoever insults me or my family is asking for a fight.
34. () () I never play practical jokes.
35. () () It makes my blood boil to have somebody make fun of me.
36. () () When people are bossy, I take my time just to show them.
37. () () Almost every week I see someone I dislike.
38. () () I sometimes have the feeling that others are laughing at me.
39. () () Even when my anger is aroused, I don't use "strong language."
40. () () I am concerned about being forgiven for my sins.
41. () () People who continually pester you are asking for a punch in the nose.
42. () () I sometimes pout when I don't get my own way.
43. () () If somebody annoys me, I am apt to tell him what I think of him.
44. () () I often feel like a powder keg ready to explode.
45. () () Although I don't show it, I am sometimes filled up with jealousy.
46. () () My motto is "Never trust strangers."
47. () () When people yell at me, I yell back.
48. () () I do many things that make me feel remorseful afterward.

TRUE FALSE

49. () () When I really lose my temper, I am capable of slapping someone.
50. () () Since the age of ten, I have never had a temper tantrum.
51. () () When I get mad, I say nasty things.
52. () () I sometimes carry a chip on my shoulder.
53. () () If I let people see the way I feel, I'd be considered a hard person to get along with.
54. () () I commonly wonder what hidden reason another person may have for doing something nice for me.
55. () () I could not put someone in his place, even if he needed it.
56. () () Failure gives me a feeling of remorse.
57. () () I get into fights about as often as the next person.
58. () () I can remember being so angry that I picked up the nearest thing and broke it.
59. () () I often make threats I don't really mean to carry out.
60. () () I can't help being a little rude to people I don't like.
61. () () At times I feel I get a raw deal out of life.
62. () () I used to think that most people told the truth but now I know otherwise.
63. () () I generally cover up my poor opinion of others.
64. () () When I do wrong, my conscience punishes me severely.

TRUE FALSE

65. () () If I have to resort to physical violence to defend my rights, I will.
66. () () If someone doesn't treat me right, I don't let it annoy me.
67. () () I have no enemies who really wish to harm me.
68. () () When arguing, I tend to raise my voice.
69. () () I often feel that I have not lived the right kind of life.
70. () () I have known people who pushed me so far that we came to blows.
71. () () I don't let a lot of unimportant things irritate me.
72. () () I seldom feel that people are trying to anger or insult me.
73. () () Lately, I have been kind of grouchy.
74. () () I would rather concede a point than get into an argument about it.
75. () () Sometimes I show my anger by banging on the table.

VITA

Deborah Leigh Edwards was born in Raleigh, North Carolina, on October 4, 1954, to Mr. and Mrs. James Paul Edwards.

In August, 1972, she entered Lees-McRae College, Banner Elk, North Carolina, and received an Associate of Science degree in May, 1974. In August, 1974, she entered Appalachian State University, Boone, North Carolina, and received a Bachelor of Science degree in Health, and Physical Education in 1976.

In 1977, she taught physical education and coached volleyball at Meredith College, Raleigh, North Carolina. In 1978, she taught biology, health, and physical education and coached at Kernersville Wesleyan Academy, Kernersville, North Carolina. In September, 1979, she accepted a teaching assistantship in the School of Health, Physical Education, and Recreation at The University of Tennessee, Knoxville, and began study toward a Master of Science degree. She expects to receive the Master of Science degree in August, 1980.