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IN COLLEGE WRESTLING

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Joe Don Willis, B.S.E., M.S.E.

****

The Ohio State University
1968

Approved by

[Signature]
Adviser
College of Education
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<tr>
<td>May 14, 1936</td>
<td>Born - Hope, Arkansas</td>
</tr>
<tr>
<td>1960</td>
<td>B.S.E., Henderson State Teachers College, Arkadelphia, Arkansas</td>
</tr>
<tr>
<td>1960-1963</td>
<td>Teacher, Public Schools in Gurdon and Pine Bluff, Arkansas</td>
</tr>
<tr>
<td>1963-1964</td>
<td>Teaching Assistant, Division of Physical Education, Kearney State College, Kearney, Nebraska</td>
</tr>
<tr>
<td>1964</td>
<td>M.S.E., Kearney State College, Kearney, Nebraska</td>
</tr>
<tr>
<td>1964-1966</td>
<td>Instructor, Kearney State College, Kearney, Nebraska</td>
</tr>
<tr>
<td>1967-1968</td>
<td>Instructor, The Ohio State University, Columbus, Ohio</td>
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CHAPTER I

INTRODUCTION

One of the most vital yet perplexing problems confronting the coach of a highly competitive sport centers on the motivation of the athlete. Few would dispute the contribution which motivation makes to success in athletic endeavors yet little is known of the wide range of motives which each person brings with him to a competitive situation. The motives which direct individuals into sports participation and insure continued participation are widely divergent and highly variant. Similarly, the motives which determine the level of intensity of performance in an activity vary greatly among individuals. Some participants are only mildly concerned with the outcome of a contest, gaining greatest satisfaction from the social, psychological, or physiological benefits which are largely independent of the results. Others may participate primarily for the feeling of accomplishment gained from successful performance. It is the performer who is success oriented toward whom this study is directed.

The variety of motives and individual differences in strength of motives so obvious in sport undoubtedly give rise to the common paradox of the gifted performer who lacks
the necessary motivational set to function to capacity. Familiar also is the athlete who is less gifted but who manages to compensate for his lack of ability by a total commitment and a willingness to put forth great amounts of effort in order to succeed.

The importance of motivation to the quality of athletic performance has prompted more than one coach to place the very highest premium upon this aspect of competition. This is evidenced by the numerous terms such as "desire," "drive," "heart," "competitive spirit," and others which coaches have used in an effort to capture the essence of this desirable characteristic. Tutko and Ogilvie, after interviewing over a hundred coaches, found that, of the many responsibilities of the coach, motivation was felt to be the most complex and puzzling. Of those interviewed all agreed that motivation was anywhere from fifty to ninety per cent of a coach's total responsibility.¹

Perhaps the vital role which motivation plays in human performance is best illustrated in terms of Vroom's formula: performance = f (ability X motivation). In this conception the effects of motivation on performance are dependent upon the level of ability while the relationship of

ability to performance is dependent upon motivation.\textsuperscript{2} From this formulation one can infer the importance and interactive role which motivation plays in combination with ability to produce performance. In view of this relationship it would seem a safe assumption that motivation could be thought of as indispensable to good athletic performance and the \textit{sine qua non} of athletic success.

In contemporary college athletics ability probably could be considered less of an unknown factor than motivation. The mechanical, technical, and physiological developments in recent years have provided coaches with valuable insights which have paid great dividends in terms of improved performances. Swimming and track and field records especially have been improved as a result of this increased technical knowledge while other sports have benefited in similar fashion as scientific information has been applied by conscientious coaches. Interval training, circuit training, sophisticated techniques for analyzing form and greatly improved equipment and facilities are but a few examples of the applied technology.

In the psychological realm athletics has not fared so well. Coaches know little of the nature of motivation and therefore must rely largely on trial and error methods and intuition. It has been stated quite realistically that this

is the most neglected area of the coach's training. Stephen D. Ward stated that "to my knowledge, no worthwhile scientific study of motivation in sports has ever been accomplished or even attempted." Ward's assessment of the situation may not be entirely justified in view of the fact that some work has been done in this area; however, the fact remains that far too little is known about this important facet of athletic performance. A greater knowledge of motivation would be of incalculable theoretical and practical value. Ogilvie, illustrating this point, has stated that we are fast approaching perfection in technical skills in track and has predicted that the next important breakthrough in performance will occur when the motivational factors that contribute to success and failure are understood.

In view of the importance of motivation to athletic performance and the lack of substantiated information, research in this area is greatly needed. The lack of motivational research in athletics is probably due to several factors. First, psychologists are in disagreement as to the nature and causes of motivation, and there is therefore no generally accepted definition of motivation. Secondly, the

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3Tutko and Ogilvie, op. cit., p. 360.


5Bruce Ogilvie, "Future Contributions of Motivational Research in Track," Track Technique (September, 1963), 388.
breadth and variability of motives which a person brings into a competitive situation defy accurate measurement. Finally, Ogilvie contends that the psychological driving forces which support the need to compete in athletics is probably unique for each participant.  

In spite of these difficulties the task of studying motivation is not impossible. A research group headed by David C. McClelland and John W. Atkinson has approached motivation in a fundamental way in recent years and from their research efforts has come a theory of achievement motivation which seems to have potential applicability to competitive athletics.

The achievement motive has been defined by McClelland as a "competition with a standard of excellence."  

Heckhausen has elaborated this definition somewhat by describing achievement motivation as "the striving to increase or keep as high as possible one's own capability in all activities in which a standard of excellence is thought to apply."  

The achievement motive involves only those performances in which a person is evaluated either by himself or others in terms of a standard of excellence and in which the

---

6 Bruce Ogilvie, "Model for General Psychological Adaptation," Track Technique (December, 1964), 428.  
consequences of his actions will be either success or failure. In order for the motive to be aroused the individual must consider himself responsible for the outcome, there must be some degree of risk concerning the possibility of success and there must be an explicit knowledge of results.

The achievement motive purportedly affects actions which produce pride of accomplishment. The theory of achievement motivation is, in essence, a theory of achievement-oriented performance. Important to the theory is the belief that the achievement motive is a psychogenic need or motive which is a stable but latent attribute of personality. Important also is the evidence which suggests gross individual differences in the frequency of achievement-related responses.

Statement of the Problem

It was the purpose of this study to explore the relationship between certain aspects of the theory of achievement motivation and (1) success and (2) competitive spirit in collegiate wrestling. It was assumed that achievement motivation would have an effect upon performance in wrestling.

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12Atkinson and Feather, op. cit., pp. 11-12.
which would be reflected in the seasonal won-loss records of the athletes. The possibility that the achievement motive measures competitive spirit was also investigated.

**Definition of Terminology**

**Motive.** A motive is a disposition to strive for a particular kind of goal-state or aim. It is a relatively general and stable characteristic of personality.

**Motivation.** Motivation is defined as an activated goal-directed tendency. It is an aroused state which is situational in nature and which is concerned with producing some effect.

**Tendency.** This term is used by Atkinson for the sake of clarity instead of the term motivation. It refers to the product of motive, expectancy and incentive which represents an impulse to engage in or avoid an action which is expected to have certain consequences.

**Achievement motive or motive to achieve success (Ms).** As defined earlier the achievement motive is a general disposition to seek success in any evaluative situation. This motive is often referred to as the motive to achieve success (Ms) or the need for achievement (n Ach).

**Motive to avoid failure (Maf).** The motive to avoid failure is defined as a disposition or capacity for reacting to failure with feelings of shame and embarrassment. This motive is also considered to be a stable but latent attribute of personality which is elicited in any achievement situation.
Sometimes referred to as the fear of failure, this aspect of personality is assumed by the theory to be synonymous with anxiety about performance.

**Combined motivation.** A term of convenience, combined motivation refers to the resulting motivation score when the motive to achieve success (Ms) is combined algebraically with the motive to avoid failure (Maf) or, $Ms - Maf = \text{combined motivation}$.

**Incentive value of success** (Is). The relative attractiveness of a particular goal is the definition of Is.

**Incentive value of failure** (If). The incentive value of failure refers to the relative unattractiveness of an event that might occur as a consequence of some act. Since failure is never desirable, the value of If is considered always to be negative.

**Probability of expectancy of success** (Ps). The expectancy of success (Ps) is a cognitive anticipation that performance will be followed by some degree of success.

**Probability or expectancy of failure** (Pf). Expectancy of failure is a cognitive anticipation that performance will be followed by some degree of failure.

**Tendency to approach success** (Ts). The tendency to approach success refers to the product of $Ms \times Ps \times Is$, that is, the motivation to achieve success.
Tendency to avoid failure (T-f). The tendency to avoid failure is defined as the product of \( Maf \times Pf \times If \), i.e., the motivation to avoid failure.

Resultant tendency or resultant achievement motivation (RT). Both of these terms refer to the resulting score when the scores for Ts and T-f are combined algebraically, in other words, the resultant tendency is the net achievement motivation score.

Extrinsic motivation. The strength of the tendency to act which is attributable to the influences of motives and incentives other than those intrinsically related to the evaluation of performance.13

Competitive spirit. The determination to win in a wrestling match is the definition of competitive spirit as it is used in this study.

Theoretical Framework

The theory of achievement motivation originated in 1948, and since that time it has been in a constant process of evolution. Undoubtedly this process will continue for some time to come as evidenced by the great interest shown in the theory and the resulting large volume of research.

One of the most prolific researchers and theoreticians in this area is John W. Atkinson—a member of the original research group who has contributed a contemporary theory of achievement motivation. It is this theory described by Atkinson in his book, *An Introduction to Motivation*, and reiterated in Atkinson and Feather's *A Theory of Achievement Motivation* which will provide the theoretical framework for this study. As alluded to earlier, the theory of achievement motivation attempts to explain the direction, intensity, and the persistence of behavior in an important domain of human activities, specifically, achievement-oriented activity.

Situational Determinants

Two variables were considered by Atkinson as important situational contributions to the process of motivation. First is the expectation which the person has of success at a particular activity. The second is the attractiveness of success in the activity or the incentive value of success.

Based on a past experience in similar situations, a person's expectancy of success in a given activity might range anywhere from very weak to very strong. Expectancy of success can be thought of as the strength of the individual's subjective probability of success \((Ps)\). Probability of success in any situation can be placed on a continuum of 0 to 1.00 upon which the varying degrees of expectancy can be specified. When success is almost assured in an activity the
Ps might be, for example, near the .90 level. Similarly, for a very difficult task the expectancy might be near .10. For tasks more moderate in difficulty the Ps might be near the .50 level.

If success and failure are the alternative outcomes of an achievement task, it is obvious that when expectancy of success (Ps) is high the expectancy of failure (Pf) would be low and vice versa. It is assumed therefore that Ps and Pf add to 1.00.

The incentive value of success (Is) is another important situational variable contributing to the strength of motivation to achieve. The incentive value of success is determined by the individual based on the amount of pride which he can expect if the achievement goal is reached. From past experiences one can assess the potential value of certain accomplishments in relation to others. This factor could also be placed on a continuum and be given a value corresponding to the degree of affect which success in a task would yield.'

In essence then the incentive value of success (Is) and the expectancy of success (Ps) as situational determinants of motivation depend upon the individual's past experience. These variables change as the individual moves from one achievement situation to another.

Another important consideration involves the relationship between the two situational variables. Atkinson
reasoned that success in a difficult undertaking is usually more attractive than success in a trivial or easy task. A person normally feels greater pride in accomplishment following a difficult task than following an easy one. Since the difficulty of a task as perceived by a person can be represented by his expectancy of success, the difficulty of a task may then be represented as 1 - Ps. The idea that the incentive value of success increases as the difficulty of the task increases can now be stated in terms of Is and Ps which leads to one of the most important assumptions of the theory. It is assumed that the incentive value of success (Is) at a task is equal to the perceived difficulty of the task which can be represented by the formula Is = 1 - Ps. Following this assumption the values of Ps and Is are complementary, that is, they add to 1.00. For an example of the relationship between Is and Ps, suppose a task is easy and the Ps therefore high (.90), the incentive value would be low (.10). Similarly, when the task is difficult and the probability of success therefore low (.10), the incentive value of such a task is high (.90).

Since every achievement situation has the potential for both success and failure, it is necessary to consider the counterparts of the incentive value of success and the expectancy of success—the incentive value of failure and the expectancy of failure. As previously mentioned, the probability or expectancy of failure (Pf) is a function of the
difficulty of the task. The incentive value of failure (If) is also related to the difficulty of the task but in an opposite manner from Is. The easier the task, the greater is the repulsiveness of failure. Another way of conceiving If is that it is equal to \( -Ps \). The minus sign denotes a noxious condition and therefore one to be avoided. In the same way that Ps and Pf are complementary, Is and If also add to 1.00.

The relationship between Pf and If parallels and is analogous to the relationship between Ps and Is or, Pf + If = 1.00.

Stable Characteristics

The motive to achieve success (Ms) as defined earlier is a latent but stable characteristic of personality which an individual carries with him from one situation to another. This motive is evoked in any situation in which a person perceives his performance as being evaluated in terms of good or bad.

In addition to a general disposition to seek success, any achievement situation evokes another general disposition—the motive to avoid failure (Maf). This motive is conceived by Atkinson as a capacity for reacting to failure with feelings of shame and embarrassment. When a performance is to be evaluated and there is a possibility of failure, the result is anxiety and a tendency to withdraw from the situation. It is assumed that a disposition for anxiety about
failure tends to make all achievement activities threatening and therefore are avoided whenever possible. In other words, the theory of achievement motivation contends that the motive to avoid failure and the expectancy of failure function to inhibit actions which might lead to failure.

The tendency to Achieve Success

The tendency to achieve success (Ts) is assumed to be the product of the motive to achieve success (Ms) combined multiplicatively with the situational factors (Ps and Is) or, $Ts = Ms \times Ps \times Is$. In this formulation the tendency to approach success (Ts) is strongest when a task is perceived to be in the intermediate range of difficulty. In this study this tendency should be maximized due to the nature of the contest since theoretically in a wrestling match one has a .50 chance of winning. Realistically, however, the individual wrestler assesses his own expectancy of success which may vary somewhat one way or the other but in most cases should be in the intermediate range.

According to the theory, when the difficulty of a task is held constant for a group of persons, the tendency to approach success is stronger when Ms is strong than when Ms is weak. One of the assumptions of the study was that over the wrestling season the caliber of competition was approximately the same for all who compete. If this is a valid assumption, one should expect differences in
performance based on differences in achievement motivation, all other things being equal.

The Tendency to Avoid Failure

Analogous to Ts, the tendency to avoid failure (T-f) is the product of the motive to avoid failure (Maf) combined multiplicatively with the situational factors Pf and If or, $T-f = Maf \times Pf \times If$.

An important implication of this tendency for the competitive situation is the maximizing of the tendency to avoid failure when the task is one of intermediate difficulty. Since a wrestling match has been established as an activity within the intermediate range of difficulty, those wrestlers who display this tendency should be less successful than those wrestlers who do not because of the performance decrement attributable to this tendency.

When the difficulty of a task is held constant, the tendency to avoid failure is stronger when Maf is strong than when it is weak. This principle of achievement motivation when applied to wrestlers should further differentiate among those displaying this tendency.

It should be kept in mind that the most recent interpretation of the effect of T-f upon performance conceives the threat of failure as producing a tendency to inhibit the performance of actions which are expected to produce failure. This tendency opposes and dampens the positive tendency to
approach success and is therefore assumed to be detrimental to performance.

Resultant Motivation

The theory of achievement motivation assumes that in each achievement situation all individuals have both a tendency to approach success and a tendency to avoid failure. To determine the resultant tendency or resultant motivation the conflict between Ts and T-f is solved algebraically. Since T-f is always a negative quantity implying avoidance, the tendency to achieve is therefore weakened by the avoidant tendency associated with anxiety about failure.

The individuals having the highest net score or highest resultant tendency should also have the best records of performance.

When an individual's Ms is stronger than his Maf, the resultant tendency is positive and strongest when Ps is .50. When the Maf is greater than the Ms resultant tendency is negative and strongest when Ps is .50, implying avoidance or inhibition of achievement-related activities.

Most athletes, and especially wrestlers, would not fit into the latter category. Those who wish to avoid the conflict aroused by failure would probably attempt to avoid activities in which performance is evaluated. Certainly wrestling is a sport in which the results are quite explicit and should therefore be an activity which a person with a negative resultant tendency would try to avoid. Only the
strongest of extrinsic motives could entice a person with a negative resultant tendency into an activity such as wrestling. The concept of extrinsic motivation is important in the theory of achievement motivation.

Extrinsic motivation is the strength of the tendency to act attributable to motives other than those intrinsically related to the evaluation of performance. Even though a person's resultant tendency is negative, a person may still undertake an achievement task as a result of extrinsic motivation. Coercion, social pressure, financial reward, need for affiliation as well as other motives could be given as examples of extrinsic motivation.

Performance then is seen as a function of the total strength of tendency to perform an act while the total strength of tendency is equal to achievement-related motivation plus extrinsic motivation.14

Limitations and Assumptions

1. Among the most significant limitations of this study was the fact that there is no guarantee that an achievement motive actually exists. It was assumed, however, that such a motive does exist and can be measured as indicated by the numerous research studies which support such a view.

2. The sensitivity of the instrument for measuring the achievement motive to situational factors was another limitation of the study. Since optimum results were expected under neutral conditions as contrasted to relaxed or achievement-oriented conditions, every effort was made to conform as closely as possible to the recommended conditions in the administration of the test. However, the necessity of administering the tests individually to three subjects may have affected their responses because of this sensitivity.

3. A third limitation of the study concerned the tentative nature of the theory of achievement motivation. Any deficiencies of the theory itself will affect the results of this study.

4. The validity and reliability of the instrument for measuring the achievement motive were not as high as one might wish. However, both were of sufficient levels to justify its use in experimental research.

5. Both psychological instruments used in this study were general in nature in that they were designed for use in many situations. It is highly possible that neither instrument will disclose the fine differences inherent in this self-selective group of wrestlers. Instruments of a more specific nature designed especially for the athletic situation, would probably have yielded more valid results. Unfortunately no such instruments exist at present.
6. It should be kept in mind that this was an exploratory study and one of the first attempts to apply the theory of achievement motivation to competitive athletics. Any inferences taken from the results of the study should be viewed with caution and with some reservation awaiting further study. Any conclusions which were made pertain only to the subjects measured in the study.

7. Another limitation of importance to this study was the factor of ability. It was assumed that all of the wrestlers who participated in the study were of near-equal ability based on the exposure to the same coaching methods and the degree of skill required of all who compete in a varsity sport such as wrestling at the university level. Another assumption related to the ability factor concerned the caliber of competition. It was assumed that over the season the degree of difficulty would be approximately equal for each participant. In view of these assumptions any conclusion concerning the contribution of achievement motivation to success in performance must be tempered by the consideration of the contribution which ability makes to performance.

8. The effects of temporary conditions such as injury, illness, fatigue, dehydration, etc., which would have affected the performance of the subjects to some degree were not controllable.

9. Finally, to what extent extrinsic motivation affected the results of this study was impossible to determine.
Hypotheses

I. Wrestlers who are higher in the achievement motive (Ms) will be more successful in wrestling performance than those who are low in this motive.

II. The wrestlers who are found to have higher scores on the motive to avoid failure (Maf) will tend to be less successful than those who score low in Maf.

III. Subjects with higher combined motivation (Ms-Maf) scores will exhibit higher success scores than the subjects with the lower combined motivation scores.

IV. Higher success scores will be found for those subjects with higher resultant tendency scores than for those with lower resultant tendency scores.

V. There will be a positive correlation between the achievement motive (Ms) and competitive spirit.

VI. There will be a negative correlation between the motive to avoid failure (Maf) and competitive spirit.

VII. There will be a positive correlation between combined motivation and competitive spirit.

VIII. There will be positive correlations between each of the measures of resultant tendency and competitive spirit.
CHAPTER II

REVIEW OF RELATED LITERATURE

An attempt will be made in the first portion of this chapter to trace the development of the theory of achievement motivation from its origin to its present stage of development. Special emphasis is placed upon those studies which have related the achievement motive to various types of performance. This will be followed by an attempt to establish the applicability of the theory to the athletic situation based upon the literature of achievement motivation. Finally, related research from physical education and athletics will be considered.

Development of the Theory of Achievement Motivation

Although David C. McClelland of Harvard and John W. Atkinson of the University of Michigan are given the greatest share of the credit for the development and sophistication of the theory of achievement motivation, psychologists were beginning to formulate ideas in this direction as early as 1910. Narziss Ach's "determining tendency" and Kurt Lewin's "quasi-need" were among the earliest efforts
to describe and explain achievement-related behavior.\textsuperscript{1}

Another Harvard psychologist, Henry A. Murray in his *Explorations in Personality*, laid much of the groundwork for subsequent investigations through his conceptualization of a "need for achievement" (n Ach). This need was considered by Murray to be a secondary or psychogenic need representing common reaction systems and wishes. N Ach was purported to describe actions which expressed desire for accomplishment and prestige, ambition, the need to overcome obstacles, to exercise power, and to strive to do something difficult as well and as quickly as possible.\textsuperscript{2} It was Murray's contention that the n Ach was focalized on the basis of interest, that is, an individual's desire for athletic success, his desire for social prestige, the desire for intellectual distinction, etc.\textsuperscript{3}

Another highly significant contribution made by Murray to the development of a theory of achievement motivation was his work with the Thematic Apperception Test (TAT)--a projective instrument designed to reveal some of the drives, emotions, sentiments and other aspects of personality.\textsuperscript{4} More will be said about the TAT below.


\textsuperscript{3}Ibid., p. 164.

The next step in the development of the theory of achievement motivation was undertaken by a research group at Wesleyan University headed by McClelland. From this group came a major break in the traditional approach to motivation. Prior to this time most psychologists were in agreement to some degree with respect to the general nature of motives. The common assumption of most theories was that motives were deficit tensional states which energized the organism until equilibrium was restored.\(^5\)

McClelland took exception to this view of motivation citing several deficiencies in such a formulation. To him the traditional conception of motivation did not allow for the directionality of motives nor did it allow for the active comforts and pleasures of life. McClelland conceived a motive as an expectancy of affective change. His basic idea was simply that "certain stimuli or situations involving discrepancies between expectation and perception were sources of primary, unlearned affect, either positive or negative in nature."\(^6\)

Another way of viewing motives according to McClelland is to look at them as surface modes of reaction with two basic objectives--to approach and maintain pleasure and to avoid or reduce pain. Motives develop out of repeated

\(^5\)McClelland, The Achievement Motive, pp. 7-8.

\(^6\)Ibid., pp. 8-12, 28.
affective experiences connected with certain situations and behavior. Important to the theory is the concept that motives are acquired and therefore take time to develop and show individual differences.

In this system all motives are learned, i.e., a motive is the result of the organism's affective reaction to a stimulus. Consistent with this line of reasoning, achievement motivation is therefore determined by environment. Situations which involve competition with standards of excellence imposed on the child by the family and the culture produced positive affect if the competitive experience is successful and negative affect is unsuccessful. Families which stress such competition or insist that the child be able to perform certain tasks independently and well should produce individuals with high achievement motivation. 7

The first recognizable theory of achievement motivation came about largely as an outgrowth of the numerous research studies in motivation carried out by the McClelland group during the late 1940's and early 1950's. Dissatisfaction with existing theories led to research efforts which ultimately yielded the framework of a theory. Of vital importance to the initial research efforts was the acceptance of the hypothesis that fantasy is an excellent place to look for and measure the effects of motivation. This basic

7 Ibid., pp. 302-28, 275-76.
assumption had been supported by some of Freud's work and by the clinical success of Murray's Thematic Apperception Test. Adapting Murray's technique for eliciting fantasies, it was clearly demonstrated in a series of studies that motives could be experimentally aroused and the intensity of motives controlled through the manipulation of arousal conditions.

The assumption upon which the TAT is based contends that pictures can be used to elicit stories which arouse expectancies. These expectancies in turn engage particular motives of the individual which are expressed in his stories. In other words, the story reveals the associations that real situations which are similar would elicit. The TAT has several advantages over the self-report type of instrument. This method reputedly can get at difficult areas of motivational differences because the subject is unaware of the true aim of the test and therefore bias is minimized. Secondly, inner motives are tapped before they are obscured by other psychological factors; and third, the TAT allows a wide latitude of response.

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8Ibid., pp. 3, 97-106, 139-60.


A sizable portion of *The Achievement Motive* by McClelland was devoted to the extensive process whereby the TAT was developed as an instrument for measuring achievement motivation. Scoring categories were identified and refined, validity and reliability established, and numerous developmental problems solved. The TAT in its present form, though still not a highly definitive instrument, is considered suitable for experimental research.11

In the early development of the theory it was recognized that any potential achievement situation, carried with it the threat of failure, as well as the possibility of success. It was necessary therefore to conceptualize two motives being elicited simultaneously—the motive to achieve success and the motive to avoid failure. The theory of achievement motivation can be viewed as the resolution of the conflict between the two opposing tendencies.12 The nature of the relationship between these two motives was discussed in some detail in Chapter One. Very briefly it might be restated that the motive to avoid failure is construed as an inhibitory or avoidance tendency which detracts


from the motive to seek success. It is therefore viewed as
detrimental to performance—a contention corroborated by a
number of studies.

Alpert and Haber found that anxiety about achievement
interfered with performance on aptitude tests. They also
discovered a negative correlation between anxiety and col­
lege grades. Similar results were reported by Sarason and
Zweibelson.13 Anxiety affects performance in physical
activity in much the same way. Evidence to support this
point of view is included later in this chapter.

Following the demonstration of utility of thematic
apperceptive content and the subsequent publication of The
Achievement Motive, research in achievement motivation has
been quite prolific and the applications of the theory have
taken many directions. Many of these studies have been
concerned with how individual differences in n Ach are re­
lated to other behavior. Other studies have attempted to
discover what kind of person is highly motivated to achieve
while some researchers have concentrated their efforts pri­
marily upon the development of a valid conception of human
motivation.14

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13 Richard Alpert and Ralph N. Haber, "Anxiety in
Academic Achievement Situations," Journal of Abnormal and
Social Psychology, LXI (1960), 207-15; Irwin G. Sarason,
"Test Anxiety and Intellectual Performance," Journal of Ab­
normal and Social Psychology, LXVI (1963), 73-75; I. Zweibel­
son, "Test Anxiety and Intelligence Test Performance,"

The area of particular importance to this study has to do with the effects of achievement motivation upon performance which are discussed in the next section.

Achievement Motivation and Performance

Numerous attempts have been made in recent years to relate achievement motivation to behavior. The results of these attempts have shown marked differences probably due to the nature and complexity of the problem. It appears that definite conclusions concerning the relationship between motivation and performance await further investigations.

Among those studies which indicate a positive relationship between achievement motivation and behavior are several studies dealing with academic performance. Rosen found a significant relationship between motivation and academic achievement while McClelland revealed a positive correlation of .51 between n Ach and college grades.15

Similarly, Morgan found a positive relationship between n Ach and point-hour ratio among college students of high ability which two subsequent studies corroborated.16

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In a study which used an alternate measure of the achievement motive, the French Test of Insight, a difference in motivation was demonstrated between achievers and non-achievers.17

Chahbazi, using a one picture measure of the need for achievement, found it to be a fairly good predictor of the first term grade average of agriculture students.18 A positive but low and insignificant relationship between combined motivation scores and grades received on a final examination was reported by Smith.19

In other areas of human performance relationships between achievement motivation and problem solving success has been established in a variety of laboratory tasks. McClelland reported a relationship between achievement motivation and performance in a scrambled words task. He

Achievement Motivation to Academic Achievement in Students of Superior Ability," Journal of Educational Psychology, LI (October, 1960), 259-66.


also found high n Ach scores to be associated with learning when learning is required or is possible in a task and is associated with speed of performance when learning is not required. French, in two separate studies, demonstrated the relationship between achievement motivation and problem solving success. Performance on an anagrams test revealed similar results with those individuals with high n Ach and low test anxiety obtaining higher performance scores under moderately difficult conditions.

Comparatively fewer studies have been attempted which involve achievement motivation and perceptual and motor tasks. As a result there are no definite trends relating achievement motivation to performance in these types of tasks. There are, however, some studies which have indicated a positive relationship. Miles, working with the Iowa pursuitmeter, concluded that in skills requiring sensorimotor


coordination highly motivated subjects learn more quickly. In a task involving an electric maze, Johnson found that highly motivated subjects worked with fewer errors and learned more quickly than subjects low in motivation.

In a more practical vein McClelland, after studying achievement motivation in Turkey, reported that outstanding businessmen were significantly higher in n Ach than a group of less successful managers. One of the conclusions of this study was that the n Ach is associated with business success.

This section has been an attempt to illustrate the adaptability and applicability of achievement motivation to several different performance situations. At the common sense level it seems obvious that a relationship should exist between achievement motivation and performance in athletics. McClelland, however, has stated that there is no necessary connection between n Ach and efficient performance. He qualified this statement by saying that a poor performer

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in some cases could show a high achievement motivation but that this should be the exception rather than the rule. He went on to say that "there should be a significantly positive but moderate correlation between n Achievement and the actual efficiency of performance of various sorts."\(^{26}\)

The Applicability of Achievement Motivation to Athletics

As mentioned in Chapter One the theory of achievement motivation should have ready application to competitive athletics, therefore, the following portion of this chapter is devoted to some of the implicit and explicit illustrations of this applicability.

In the literature of achievement motivation frequent reference is made to athletics in order to illustrate certain facets of the theory. Speculating on the nature of achievement motivation, McClelland hypothesized that in some subjects the achievement motive would be aroused by a variety of cues while in others the achievement motive would be aroused only by very specific situations such as playing cards, winning at football, etc.\(^{27}\) He went on to state: "Whether the performance be grooming, playing football, landing a job, or herding sheep, it can give evidence of an achievement motive."\(^{28}\)

\(^{26}\) McClelland, The Achievement Motive, p. 80.

\(^{27}\) Ibid., p. 73.

\(^{28}\) Ibid., p. 80.
McClelland has suggested the possibility of determining the intensity of achievement motivation in each of several different areas from which one might infer the feasibility of the development of a measure for assessing the strength of the motive for the athletic situation. Some degree of support for this idea can be inferred also from a study by a group of sociologists who concluded that the need for achievement may be expressed through such non-vocational activities as sports, hobbies, etc. 29

Athletic competition was referred to by Atkinson as a "fairly universal achievement training experience" for all males in this society. In another context, he stated that the desire to succeed is heightened when one is challenged by some competitive activity such as an examination or a tennis match. 30


"One of their favorite games was to see who could shoot the


most arrows into the air before the first one hit the ground --a typical activity for people high in n Achievement."\(^{31}\)

McClelland referred also to the mythical Greek god Hermes as the member of the pantheon who best fit the n Achievement personality type. Hermes, among other things, was an athlete who later became a patron of gymnasia and athletic contests. McClelland reasoned that if Hermes was the embodiment of the spirit of high n Achievement then:

\[\ldots\] we might expect those with high n Achievement to be more interested in competitive athletics both as spectators and participants. This association is not unreasonable: by definition people with a high level of n Achievement show much inner concern with doing something well, with striving to achieve or surpass some standard of excellence. Shouldn't they, then, be interested in competitive games where they will have a chance to achieve (or watch others achieve) standards of excellence? Certainly cases can be found where a high level of n Achievement would appear historically to have corresponded with bursts of interest in competitive sports. The Olympic games, for example, were started during a period in the history of classical Greece when n Ach level was high.\(^{32}\)

An analysis of modern nations does not confirm the above hypothesis. In an effort to determine a nation's interest in competitive athletics the unofficial team scores of the 1928, 1932, 1952 and 1956 Olympic Games were converted into per capita. It was speculated that the number of points earned by the representatives of a given country would be indicative of the extent of interest in athletics of


\(^{32}\)Ibid., p. 322.
that country. The correlations between n Achievement scores and the per capita scores for 1928 and 1932 were insignificantly positive while the correlations for 1952 and 1956 were insignificantly negative. Certain post hoc objections were raised as to the use of Olympic Games' team scores as a measure of national interest in sports competition. McClelland stated that throughout the history of the Olympic Games considerations of power and prestige have played as much of a part in the success of the teams as an interest in sport for its own sake. The Italians under Mussolini, the Germans under Hitler and Russia were cited as examples of the contention. In addition, the host country nearly always does better at home than abroad. Another difficulty encountered in such research involves the distortion in index scores brought about by one or two outstanding athletes from countries with a small population. The biggest difficulty of the index, however, was attributed to the fact that competitiveness between individuals implies a striving for power or dominance as well as a need for achievement.\textsuperscript{33} Since the need for power was not considered in the study the results would obviously be inconclusive.

Contrary to the results just presented, positive evidence for the hypothesis was found in a study of preliterate tribes. Kulakow, after making extensive ratings of the

\textsuperscript{33}Ibid., p. 323.
kinds of games played by several primitive tribes, concluded that the tribes higher in n Ach tended to play more competitive, individualistic games as contrasted with group, non-competitive ones.\textsuperscript{34}

Numerous aspects of the theory of achievement motivation seemingly have applicability to competitive athletics. Many of these, however, must be inferred or extrapolated from situations other than athletics.

McClelland, in a discussion of risk-taking in games of skill and chance, hypothesized that persons with high n Ach should have personality characteristics which should lead them to "blossom" under conditions of moderate uncertainty. It has been shown that the individual who has a high achievement motive works harder under longer objective odds, works harder when it is thought that personal effort can make a difference in outcome, and is greatly interested in pursuits which yield achievement satisfaction. Optimism, conscientiousness and ambition are qualities which are associated with high achievement motivation. Similarly, those individuals who are high in this attribute exhibit more frequent patterns of delayed gratification and long-term involvements.\textsuperscript{35} These characteristics of the highly motivated individual as described by McClelland resemble markedly many of

\begin{itemize}
\item \textsuperscript{34} Ibid., p. 52.
\item \textsuperscript{35} McClelland, \textit{The Achieving Society}, p. 211.
\end{itemize}
the qualities often cited by coaches as desirable for successful athletes.

Of increasing importance to the modern college and university coach is the ability to select athletes who have not only athletic talent but also the desire and the willingness to pursue an academic degree. Obviously the ability to predict behavior in both of these areas would have great value for the coach. The theory of achievement motivation might have some utility in this selection process. For example, it is known that those persons who are high in achievement motivation are about two and one-half times as likely to have graduated from college as individuals who are low in this characteristic.\(^{36}\) From this one might theorize that athletes with high achievement motivation would be less prone to drop out of college before graduation. It has also been demonstrated that highly motivated persons exert themselves more or mobilize more energy in achievement situations in addition to starting at a higher level of performance than those low in motivation—another factor worthy of consideration in the selection process.\(^{37}\) Finally, it has been stated that the achievement motive is established fairly early in life and, by the age of ten, the future achieving


behavior of the adult can be predicted.\textsuperscript{38} The implications of this statement are almost overwhelming in view of the many efforts which concerned sports-development groups have undertaken to identify talent at an early age.

Probably less exciting in their potential but certainly of relevance to the athletic situation are several additional aspects of achievement motivation mentioned by Heckhausen. Highly motivated persons attach more importance to excellence of performance than upon prestige while the reverse is true of those low in motivation. Secondly, in a problem solving situation success-motivated subjects prefer a partner who is more able than themselves while the failure-motivated person is more likely to choose someone of approximately the same or inferior ability. This implies that the success-motivated person would rather try to succeed (win) in cooperation with someone who is skilled, irrespective of his personal feelings for the task partner, than to attempt such an undertaking with a friend of less ability. Thirdly, success-motivated persons make greater gains during competition than failure-motivated individuals. This illustrates a greater tendency to approach success which is extremely important to superior athletic performance. Lastly, success-motivated subjects are more realistic in terms of goal setting. They make greater allowance for what they consider

\textsuperscript{38}\textit{Ibid.}, p. 147.
to be actually attainable than do failure-motivated sub-
jects who have a tendency to either stay cautiously below or
go speculatively above in estimating performance.39

**Related Research in Physical Education and Athletics**

Although comparatively few studies have been done re-
lating achievement motivation to physical education or
athletics, several researchers have attempted to determine the
motivating conditions under which optimal performance occurs.
Of those research efforts which have attempted to study moti-
vation in physical activity, the majority have concerned
themselves with the psychological environment just prior to
or during performance. In most of these studies attempts
have been made to improve performance by verbal exhortation
or other auditory stimuli.

Studies of this type differ from the present study in
that they do not concern themselves with the underlying
motives which influence performance but focus instead upon
the short-term incentive conditions which may have a tempo-
rary effect upon performance. These studies are therefore not
of direct relevance to the present study but are presented as
representative of the bulk of research in motivation in
physical activity.

Studies which have approached motivation only in terms
of situational incentives have been categorized as gross

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39Ibid., pp. 23, 79-80, 76, 50.
motivational studies and will be considered in the first part of this section. This will be followed by a review of the research having the greatest relevance to the present study, that is, those studies which have dealt with achievement motivation in physical activity. After the subsequent consideration of studies utilizing projective techniques and those dealing with emotion, the chapter will be concluded by studies which have related to competitive spirit.

**Gross Motivation and Performance in Physical Activity**

Ulrich and Burke tested nine men and nine women physical education majors on a bicycle ergometer using encouraging and discouraging reports of performance to the subjects during exercise. Several physiological measures were taken in an effort to determine the effect of the motivating conditions upon body functioning. After a base trial in which each subject was instructed to produce as many revolutions as possible the subjects were divided into two groups which included both men and women. On the second trial the subjects were told that after ten seconds a bell would ring if the score for the previous trial was surpassed and that a buzzer would sound if the score was below the initial mark. Results indicated that both the bell and the buzzer elicited greater work output with the former producing slightly higher work output than the latter. It was also found that significant cardiorespiratory changes occur when motivational
stressors are employed. The reaction of males and females to motivational stressors were found to be similar in kind and quality.40

Four hundred airmen were tested by Fleishman on a complex coordination test involving the maneuvering of stick and rudder controls in response to visual stimuli. The subjects were randomly divided into two groups with one group receiving a variety of motive-incentive instructions and the other group receiving no encouragement. The results were analyzed in terms of the scores of the good performers and poor performers of each group. Although no significant difference was found between the poor performers of the control group and the experimental group, the good performers who had received motivating stimuli had significantly better test scores than the good performers in the control group.41

Locke summarized four studies which attempted to corroborate the findings of Fleishman concerning the interaction between ability and motivation in performance. This relationship did not receive strong support in these studies. Only one of the four studies reached significance while another


almost reached a satisfactory level of confidence. It was concluded, however, that the effects of motivation were generally greater for high ability subjects than for the low ability subjects.  \footnote{42}

Strong studied the effects of six motivating conditions upon the performance of sixth grade boys and girls on the AAHPER Fitness Test. The motivating conditions included: (1) competition with a classmate of equal ability, (2) competition with self, (3) competition to establish class records, (4) competition with a classmate of markedly different ability, (5) expressed level of aspiration, and (6) team competition. Of the six conditions, level of aspiration and team competition were found to be more effective than the other four. It was also indicated that the boys tested responded to motivating conditions better than girls as evidenced by improved performances.  \footnote{43}

Ryan made an effort to determine the effects of four types of motive-incentive conditions upon grip strength. Eighty subjects were divided into four groups on the basis of a preliminary test. On a subsequent test one group was verbally exhorted to improve. Another group was given the

\footnote{42} Edwin A. Locke, "Interaction of Ability and Motivation in Performance," Perceptual and Motor Skills, XXI (December, 1965), 719-75.

results of the first test and allowed to see the dial on the second trial. A fourth group was threatened with electric shock for failure to improve. Results of the study revealed no significant differences between the four conditions or between groups. Ryan suggested that in strength testing the only incentive necessary is to impress upon the subjects the importance of giving a maximum effort.\textsuperscript{44}

Hall and Cain, using seventh and eighth grade boys as subjects, studied the effects of urging upon sit-up scores. They also attempted to determine the effects which those who quit prematurely had upon the subjects who were still being tested. The effect of urging upon sit-up scores was inconclusive. The results did however indicate that those who quit prematurely did not significantly influence the scores of those who continued for the entire test period.\textsuperscript{45}

One of the most recent studies of the gross motivation type involved 120 college men who were tested in an effort to determine the effects of four motivating conditions during training and testing of strength. The subjects were divided into four isometric training groups of thirty subjects each. Group I trained for eight weeks without any purposefully induced motivation; Group II received knowledge


of scores as motivators; Group III trained with a knowledge of scores plus an assigned goal; and Group IV trained with a knowledge of scores, an assigned goal, and placebos. A special motivational test which simulated an athletic contest was given at the end of the training period. It was found that the three motivation groups increased strength significantly while the nonmotivated group did not. The special motivational testing situation brought about significantly greater strength scores over the scores achieved during training. It was also concluded that strength measures were greatly influenced by the level of motivation present during training and testing.46

Achievement Motivation in Physical Activity

Among the relatively few research studies in physical education which have made use of achievement motivation is one by William L. Lakie which involved thirty-nine male college students. Employing French's Test of Insight and the neuroticism scale of the Maudsley Personality Inventory as measures of n Ach and anxiety respectively, Lakie examined the relationship between galvanic skin response and task difficulty and motivation. A basic premise of the study was that palmar skin response is a part of one's

preparation for action and is not indicative of feeling or emotion. After a preliminary session in which the subjects were given the motivation tests and a preliminary grip test each subject was asked to make contractions on a dynomometer at 50, 70, 90, and 110 per cent of his maximal contraction. Results of the study seemed to support the view that GSR is a part of the subjects preparation for action as GSR scores were found to increase with an increase in task difficulty. It was suggested that since significantly larger GSR scores are evidenced for the more difficult tasks, the GSR measure may provide an index of the perceived difficulty of the task. Another finding of some consequence involved the relationship between GSR scores and achievement motivation. It was revealed that success motivated subjects had higher mean GSR scores on the more difficult tasks. This led to the speculation that the GSR scores may also be an index of the desire to attain a standard of excellence.\(^47\)

Ryan and Lakie studied the effects of competition upon the performance of twenty subjects high in anxiety and twenty subjects low in anxiety obtained from college physical education classes. A laboratory test which involved fitting rings over pegs in a prescribed pattern was the experimental task to which a competitive element was added. The study

tested and substantiated the hypothesis that in a neutral or noncompetitive situation, persons in whom the motive to avoid failure is stronger than the motive to succeed perform better than those who are success oriented. In a competitive situation, however, persons with a higher motive to succeed performed better. It was stated that the more anxious individual tended to do better when not threatened or under pressure. When placed in competition his anxiety or fear of failure seemed to interfere with performance. In contrast, the competitive situation appeared to stimulate the success-oriented person, energizing and improving his performance.  

Seventy-one elementary school boys were tested by DeCharms and Prafulachandra on a ball tossing experiment in an effort to corroborate Atkinson's theory of risk taking among different levels of achievement motivation. In a preliminary exercise the subjects were instructed to toss a volleyball at a basket placed on the floor at seven distances ranging from four to twenty-two feet. After a rest period the subjects were allowed to shoot the ball toward the basket twenty times from any distance. The subject was informed of his probability of success at each distance based upon the preliminary trials. The hypothesis which predicted that in

risk taking tasks involving motor skills, subjects who are oriented toward success will take more moderate risks than those oriented to avoid failure was not substantiated. A second hypothesis which predicted that success-oriented subjects would be more successful than failure-oriented subjects also failed to be substantiated. Of particular interest, this study revealed that subjects with a high achievement motive and high motive to avoid failure were more skillful in risk-taking tasks. This finding is in opposition to results of other studies which have consistently found the group which was high in Ms and low in Maf to be the best performers. It was concluded that when a person is alone during performance and is knowledgeable of his probability of success at each distance a factor of achievement motivation and anxiety have no effect upon risk taking behavior.49

An effort to correlate achievement motivation to physique among a group of high school boys led to some interesting conclusions and insightful explanations. Mesomorphy was found to correlate positively with n Ach while ectomorphy was negatively correlated. It was suggested that a stronger physique might lead to early success experiences which strengthen Ms. A second tentative explanation was that boys with stronger physiques are likely to be able to surmount

challenges or risks more successfully. Another possible explanation was that boys with a high n Ach exercise more, engage in competitive sports and therefore develop stronger, more muscular bodies. Finally, it was hypothesized that physique does not produce achievement motivation but rather it is likely to be one of the conditions which make it more or less likely that a strong achievement motivation will be acquired.50

Thirty-three student subjects were given three mental tasks: imagining in response to low-contour visual stimuli, multiplication task, and a ten minute unrehearsed talk in an effort to determine the influence of achievement motivation upon electromyographic tonus. The subjects were divided into high, medium, and low motivation groups on the basis of TAT scores. During each of the three mental tasks EMG readings were taken which were subsequently related to the TAT scores. It was found that the subjects high in achievement motivation had higher EMG's than those with low or medium achievement motivation scores while performing each of the mental tasks. A rank order correlation of .68 was demonstrated between mean tonus level and achievement motive scores.51

50McClelland, The Achieving Society, 373.

La Place, in an attempt to determine whether specific personality traits were associated with success in professional baseball, studied major and minor league players by means of the Minnesota Multiphasic Personality Inventory. The dominant trait of major league players was described as a strong "drive" expressed as ambitiousness, aggressiveness, and vigorousness. It was postulated that these characteristics were the forces which provided the propulsion necessary to attain success. Self-discipline was also cited as important to success in that it "directed" an individual's drive toward his goal. Minor league players were purported to have the same strong "drive" but tended to be lacking in self-discipline and some other desirable traits.52

Ogilvie, Tutko and Irving in a study of Olympic swimmers related psychological differences between a group of control subjects and the swimmers and also between Olympic medal winners and non-medal winners. Swimmers differed from the controls in a number of personality characteristics including a greater need for success and a greater need for the spotlight. Medal winners were superior to non-medal winners in terms of degree of ambition and in the need for newer and different experiences—both qualities of the person

high in achievement motivation. Ogilvie substantiated the above contention in a summary of several research efforts. He concluded that as a group top athletes had a significantly greater achievement need coupled with low levels of anxiety and unusual capacities to handle emotions under high stress conditions.

Research Utilizing Projective Techniques

In spite of the small number of research studies in physical education and athletics which have made use of projective techniques, the few which have used this type of tool have indicated a promising potential for research in physical education and athletics.

One of the earliest studies which made use of this type of instrument involved twelve subjects who were either national champions or All-Americans. Included in the study were four football players, two lacrosse players, two wrestlers, two boxers, and one track man. The projective instruments used in the study were the Rorschach Test and the House-Tree-Person Test. The results of both tests were scored by psychologists. Comparisons of this group of champions to test norms and from the personal experience of


the evaluators it was concluded that the athletes were readily distinguished as an exceptional group. The most outstanding personality characteristics of this contingent were described as extreme aggression and a lack of strict emotional controls coupled with high and generalized anxiety. Moreover, it was found that the group possessed high levels of aspiration and exceptional feelings of self assurance. There was evidence that the subjects were exceptionally able to concentrate personality resources upon desired objectives. An unusual concern for physical power and physical perfection was also evidenced. It was postulated that the subjects' extreme aggressiveness, anxiety, and freedom from emotional controls which allowed them to aggress freely under certain circumstances in combination with high levels of aspiration would suggest a strong need for competitive achievement. From this it was hypothesized that being a champion was a matter of psychological necessity. Restraint in generalizing from the results of the study was urged because of the small sample.55

Using the H-T-P projective test, Johnson and Hutton in another study evaluated the personalities of eight college wrestlers under three conditions. The test was administered

before the season, four to five hours before the first match of the season, and the morning after competition. It was found that the athletes tended to experience a decrement in functioning intelligence, increased aggressive feelings and an increase in neurotic symptoms before the match. A return to normal after the match was typical except for considerably fewer aggressive feelings. In other words, the wrestlers experienced somewhat of a cathartic effect. This study reiterated the value of projective techniques as a promising tool for the study of the effects of athletic competition upon personality dynamics.56

Using six pictures from Murray's TAT and a twenty-item sentence completion test, Husman studied nine college boxers, eight wrestlers, nine cross country runners and seventeen controls with two objectives in mind: (1) to investigate the nature of aggression in these two groups and (2) to appraise the projective technique as a tool for probing the personality traits of athletes. The tests were analyzed for frequency, intensity and direction of aggressive responses. Results indicated that the boxers were significantly different from the other groups in that they possessed less overall intensity of aggression and tended to direct their aggressiveness inwardly. Cross country runners were found to be more extrapunitive and less intrapunitive than the control

subjects. It was suggested that both the cathartic and the circular theories of aggression were substantiated by the study. Of particular interest to the current study, it was indicated that the projective technique is useful in research of this type and it was recommended that future studies consider the TAT as a research tool.57

Anxiety in Physical Activity

Although emotion is intangible and hard to define it is nevertheless a factor to be dealt with in athletic performance. Warren R. Johnson made one of the few attempts to explore the relationship between emotion and competitive sports. With five football players and fifteen wrestlers as subjects, Johnson devised a physiological measure of emotion composed of heart rate, blood pressure and blood sugar as well as a psychological measure determined by the subject's introspection. These measures were applied at four different intervals before a contest and another measure was taken approximately fifteen minutes after the contest. It was concluded that pre-contest emotions of the nature of fear and anxiety are of serious importance in wrestling. It was suggested that excessive pre-match tension can have a decided deleterious effect upon the performance of individual wrestlers. Wrestlers who demonstrated excessive excitement

previous to matches rarely performed well. Some reservations were expressed because of the small number of subjects participating in the study. 58

In a subsequent study of emotion, Johnson and Harmon found that galvanic skin response was a better indicator than either pulse rate or systolic blood pressure as a measure of pre-game emotional disturbance for football players. Another finding of major interest was the close relationship between the importance of the game and team reactions which suggested that emotional reactivity goes with "upness" for football competition. 59

In still another study of the emotional aspects of competition, Johnson attempted to measure the intensity of the pre-contest experience by means of a psychogalvanic assessment and a word association test. It was found that the pre-contest situation, although characterized by a tendency to exaggerate in psychogalvanic response, was not detrimental to the performance of an athlete free from personality disturbances. Another finding of some importance was the impracticality of the word association test as a coaching tool due to the time necessary to administer and its


apparent lack of sophistication as a tool for predicting readiness for competition. 60

Francis J. Ryan, a track coach and also a psychologist, in describing the effect of anxiety on performance cited concern over doing well as a potential hurdle to optimal performance. It was noted that anxiety can interfere with proper timing and execution of technique. Since good performance depends upon the proper execution of a sequence of integrated steps, anxiety to achieve can disrupt this series causing a poor performance. 61

The relationship between anxiety and performance as related by Dean Ryan assumed an inverted U-shaped configuration. If the performer is lethargic, performance is poor. As anxiety or situational stress increases, performance will improve up to a point. Beyond this point an increase in anxiety tends to hinder performance. 62 This viewpoint was supported by Cratty who described this phenomenon in similar terms. In addition, he postulated that the effect of anxiety upon performance is a function of perceived stress, one's habitual manner of reacting to it, as well as the complexity


Similarly, Slusher contended that if anxiety could not be controlled, performance would be threatened by disorganization of effort characterized by poor rhythm, timing, and balance.

Commenting upon the effect which different levels of n Ach and anxiety have upon performance, Cratty stated that individuals with high general levels of anxiety coupled with high n Ach usually perform more poorly with the increased tension inherent in the competitive situation. On the other hand, those who are comparatively relaxed who also have high n Ach levels will improve performance under competitive circumstances. Stated elsewhere in similar terms "... the effect of competition on individual performance is a function of the anxiety of the individual, as well as of his need for achievement."

Competitive Spirit

One of the earliest attempts to predict an individual's competitive temperament was reported in 1935. Seeking an answer to the common phenomenon of athletes who do well in


practice but who fail in situations demanding superior performance, Berridge designed an experiment using a back and leg dynamometer and three experimental conditions. It was found that most subjects performed best when others were present and when results were announced aloud in contrast to conditions in which a person was alone with or without knowledge of results. Although disclaiming the utility of this test as a diagnostic or predictive indication of competitive temperament, Berridge suggested the desirability and the possibility of such a test. 66

An effort was made by Francis J. Ryan to explore the different reactions of college track athletes to the competitive situation. A basic premise of the study was that each athlete tends to show a consistent and characteristic way of reacting to formal competition. The "good" competitor was identified as an athlete who tends to achieve above his practice or "base" rate. The "poor" competitor characteristically fails to approach his base rate. Case studies and coaches' responses to a questionnaire provided the data for the study. The results indicated that the good competitors were hard workers, they were more conflict-free, more free to express aggression, and better adjusted. It was found that the poor competitors had trouble accepting success. The

anxieties and other forms of interference apparently were stronger following some success for these individuals. According to Ryan, the differences in competitive ability represent relative differences in freedom to achieve or to express aggression.67

While studying the personality characteristics of athletes and non-athletes, Booth developed an instrument which he claimed would discriminate between good and poor competitors. This instrument evolved from an item analysis of a personality test given athletes who had been rated by coaches and players as good or poor competitors. Twenty-two items were taken from the Minnesota Multiphasic Personality Index correlated .63 with a coach's subjective ranking of track participants' competitive behavior.68

At least two attempts have been made to validate Booth's scale. Following Booth's procedures, the test was used in an effort to predict the competitive behavior of thirty-three wrestlers from two universities. It was concluded that the Booth competitive behavior scale did not give a satisfactory prediction of competitive behavior of


these subjects. The author stated the opinion that competitive behavior reflects the strength of underlying motivations and aggressive forces which drive the individual to participate. It was also speculated that valid tests of competitive behavior will be based on measures of motivation and aggressive drives.\textsuperscript{69} Kroll and Peterson in a study of six college football teams also failed to discriminate between good and poor competitors using the Booth scale.\textsuperscript{70}

\textbf{Summary of Related Research}

The extensive research of the past twenty years has for all practical purposes established the existence and the measurability of achievement motivation. Research also has revealed a relationship between achievement motivation and various types of human performance.

In the area of physical education and athletics the majority of studies in motivation have concerned themselves with the effects of situational motive-incentive conditions upon performance. The results of such studies are largely inconclusive.


The few investigations which have related the achievement motive to physical activity and motor tasks have indicated the appropriateness of the theory for this area of inquiry. This speculation is corroborated by numerous references to such endeavors in the literature of achievement motivation. In particular, studies have been reported which have indicated a relationship between achievement motivation and (1) success in laboratory motor tasks, (2) galvanic skin response in preparation for a maximal strength effort, (3) performance in motor skills involving competition, (4) mesomorphy, and (5) muscle tone. Several researchers who used other than projective tests in studying the personalities of athletes have alluded to the important contribution of "drive" or need for achievement to the ultimate success of an athlete.

Of those who have employed projective techniques in studying athletes there seems to be a general agreement as to their usefulness and applicability. In addition to the TAT, research has included the use of the House-Tree-Person Test and the Rorschach Test.

According to results of numerous studies, anxiety can have an undesirable effect upon performance in physical activity. The general conception is that anxiety assumes an inverted U-shaped configuration. It is necessary to a degree but beyond a certain point anxiety interferes with performance.
Relatively few attempts have been made to assess competitiveness in spite of the seeming importance of this quality to athletic performance. Research to date has failed to reveal a valid means of assessing competitive spirit.
CHAPTER III

DESIGN OF THE STUDY

The Subjects

Twenty members of the varsity wrestling team at the Ohio State University served as subjects for this study. Of this number six were eventually eliminated from the study for a variety of reasons. Three of this group left the squad. Of the remaining three who were dropped from the study two did not wrestle because of a lack of experience while the third was incapacitated for much of the season by an injury. Each of the fourteen subjects included in the study wrestled in at least one match during the season.

Testing Procedures

Near the beginning of wrestling season, the Thematic Apperception Test, The Maudsley Personality Inventory and a brief questionnaire were administered to the wrestling team on two consecutive days. Approximately half of the squad was taken each day and the tests administered in a group situation. Approximately forty-five minutes was required for the completion of the three measures. At the beginning of the testing period a brief statement of the general purpose of the study was read and the subjects were urged to give
their fullest cooperation. This statement can be found in Appendix A. Because of their unavailability during the original testing periods, the instruments were subsequently administered to three subjects on an individual basis.

The Instruments

The Thematic Apperception Test

The Thematic Apperception Test as described in The Achievement Motive and also in Motives in Fantasy Action and Society was the instrument used to determine the intensity of the achievement motive.\(^1\) Pictures A, B, G, and H from the original studies were used to elicit achievement responses. The procedures for test administration recommended in the above-mentioned sources were followed as closely as possible.

Prior to the administration of the test the instructions were read in which the nature of the task was described and the subjects exhorted to use creative imagination in developing their stories about the pictures. Room lights were then turned off and the first picture exposed for twenty seconds by means of slide projection. After the exposure the lights were then turned on and the subjects had four minutes to write about the picture. Students were kept aware of the time by comments from the experimenter at one minute intervals. Near the end of the four minutes the

\(^1\)McClelland, The Achievement Motive, pp. 97-217; Atkinson, Motives in Fantasy, pp. 64-82, 179-204.
subjects were informed that they should finish quickly and get ready for the next picture. This procedure was then repeated until responses were obtained for all four pictures.

Subjects were aided in the development of coherent stories by a series of four lead questions spaced evenly on each of the eight and one-half by fourteen inch answer sheets. The questions were:

"What is happening? Who are the persons?

"What has led up to this situation? That is, what has happened in the past?

"What is being thought? What is wanted? By whom?

"What will happen? What will be done?"

Scoring the TAT. In order to evaluate the responses for thematic apperceptive content it was necessary for the experimenter to learn the proper scoring techniques. For this purpose the scoring manual presented in Motives in Fantasy Action and Society was followed which very explicitly outlined the procedures required to learn the technique.3 Practice sets were provided in the manual that had been scored by experts and against which one's responses could be checked.

The scoring system developed for the assessment of the achievement motive is quite elaborate containing three broad categories into which stories are classified: achievement

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2McClelland, The Achievement Motive, p. 98.
3Atkinson, Motives in Fantasy, pp. 179-204, 693-735.
imagery, task imagery, and unrelated imagery. Only those which meet the criteria for achievement imagery are scored further. Those stories which are scored are evaluated in terms of several sub-categories. A person's score is determined by the total number of classifiable achievement-related responses for the four pictures. The scoring system currently being used is the culmination of many previous revisions and is an admirable attempt to evaluate subjective material objectively.

After establishing a sufficient reliability with the practice materials, the TAT data of this study were analyzed. An inter-scorer reliability was determined through the cooperation of a colleague who had also learned the scoring technique. Initial independent analyses of the responses yielded a rank order correlation of .86 between the two scorers. After collaboration on the scoring differences, this correlation was raised to .99.

The Maudsley Personality Inventory

The instrument selected to assess anxiety or the motive to avoid failure was the Maudsley Personality Inventory. This is a paper and pencil type of test of forty-eight items which purportedly measures two factors of personality—extroversion and neuroticism. The neuroticism scale of this inventory has a high correlation with the Taylor Manifest Anxiety Scale used in much of the research on achievement motivation.
Jensen, reviewing the MPI in *The Sixth Mental Measurements Yearbook*, stated that the neuroticism scale could be used in place of the Manifest Anxiety Scale. It was his contention that this measure could serve the same purpose with the added advantage that it is shorter and therefore takes less time, it is more reliable and it has a greater body of psychological research behind it.

He suggested also that the MPI can be used for experimental studies in which personality factors such as neuroticism are believed to play a part in the phenomenon being investigated. In short, Jensen said that the MPI is one of the most important personality measures of its type and a preferred measure of neuroticism or anxiety.\(^4\)

Questionnaire Information

After Completing the TAT and MPI measures, each wrestler answered a brief questionnaire containing questions concerning his previous wrestling experience and related background information. Of particular interest in this measure was each subject's won-loss record in high school and college as well as the subject's estimate of his won-loss record for the pending season. This information was used in computing the values for probability of success (Ps) and the incentive value of success (Is) which was

essential in determining the resultant tendency to achieve success.

The Measure of Competitive Spirit

After the last dual meet of the season a sheet bearing the names of all of the team members was distributed and the subjects were asked to rate themselves and each of their teammates on competitive spirit. A scale from zero to 100 was used for this purpose. A copy of this rating scale can be found in Appendix D. At the same time the wrestlers were also asked for a similar rating on "performance ratio" which was defined as the ratio between one's performance and one's potential. The performance ratio was not used as part of this study but was included with the competitive spirit rating in an effort to stimulate greater deliberation and discrimination in the rating process.

The Success Factor

The criterion for success in wrestling against which the theory of achievement motivation was tested was developed on the basis of the seasonal won-loss record in dual meets. A point system was established whereby the subjects amassed points throughout the season for each match in which they wrestled with the final point total representing the degree of success for each subject. Points were awarded in the following manner:

1. One point was awarded for each match wrestled regardless of outcome. It was reasoned that it is some
measure of success to represent the university in a wrestling match since in most cases the right to wrestle had to be earned through intrasquad competition.

2. For each match won by forfeit two additional points were awarded for a total of three points.

3. Three success points were awarded for a win by a decision.

4. For a win by a fall or by default five points were awarded.

One subject who had wrestled regularly for much of the season was incapacitated for four matches on two separate occasions. In each instance, to avoid penalizing this wrestler unduly, the average number of points for the previously wrestled matches were added to his point total for each match which he missed.

**Statistical Procedures**

The two statistical measures used in this study were a one-tailed Mann-Whitney U Test and the Spearman rank correlation coefficient. The former provided the test of the hypotheses which dealt with success while the latter was used to examine the hypotheses relating to competitive spirit. Nonparametric statistical measures were employed primarily because of the unwillingness of the investigator to make the assumptions necessary for the use of parametric measures. Moreover, the small number of subjects in the comparison of
groups divided on the basis of motive configuration necessitated nonparametric analysis. In some instances correlations were computed in an effort to gain greater insight into the relationship between the various aspects of achievement motivation and success.

The overriding general hypothesis upon which this study was based contended that achievement motivation would be reflected in the degree of success in performance of college wrestlers. It was assumed that if a relationship did exist between achievement motivation and performance in wrestling, then one could predict success from motivation scores. It was also speculated that achievement motivation scores might reflect competitive spirit or desire. With these factors in mind specific hypotheses were set up to be tested.

The division of subjects into groups for the purpose of testing the hypotheses was done on the basis of the different aspects of the theory of achievement motivation. Specifically the groups were divided at the median on (1) the achievement motive (Ms) as measured by the TAT, (2) the motive to avoid failure (Maf) as measured by the MPI, (3) combined motivation (Ms - Maf) and (4) six measures of resultant tendency (RT). The resulting groups were then tested for significant differences in success scores.

In computing resultant tendency it was necessary to use alternative values for the probability of success
because of the inconclusiveness of the theory on this point. According to the theory Ps can be based upon past experience or upon one's estimation of performance. After initial statistical treatments had indicated certain shortcomings in the theory as conceived by Atkinson, it was decided to amend the theory in various ways in an effort to make it more tenable. Resultant tendency was therefore computed in the following ways:

1. Resultant Tendency I. In this treatment Ps was based on past experience in both high school and college, i.e., a value for Ps was computed by dividing the total number of matches into the number of wins. The values of Ps thus derived was then placed in Atkinson's formula for computing resultant tendency to achieve success.

2. Resultant Tendency II. The value of Ps was computed for each wrestler in this instance on the basis of the subject's estimated record for the year. The total number of matches was divided into the estimated number of wins which yielded a value for Ps. This value was then inserted into the formula and the resulting tendency computed for each subject.

3. Resultant Tendency III. An arbitrary value of .50 was set for Ps based on the theoretical assumption that for each match the wrestler has one chance in two of winning. It was assumed that this proportion would be the same for the season. In this method of computing RT the value for Is
was also fixed at a value of .50 for all wrestlers. Resultant tendency scores were then computed as described in the two preceding methods.

4. Resultant Tendency IV. The method used to determine Ps in this treatment deviated from the theory in that instead of maintaining the situational variables additive to 1.00, the writer held the Is value constant at .50 and varied the value of Ps. The values of Ps were based on the number of years of college wrestling experience and one's status on the squad. After the Ps and Is values were determined RT scores were computed in the prescribed manner. The values of Ps were arbitrarily set for each wrestler on the following basis:

a. Ps = .50. Those wrestlers who were classified as seniors and who could be considered "regulars" (those who wrestled in at least eight matches) were included in this category.

b. Ps = .40. The juniors who were also regulars received this value.

c. Ps = .30. The sophomores who wrestled regularly were given this value for Ps.

d. Ps = .20. This category included all of those who wrestled in more than three but in less than eight matches.

e. Ps = .10. Those who wrestled no more than three matches were assigned this value for Ps.
5. **Resultant Tendency V.** The theory was amended in a major way in arriving at RT V scores. This method was different in that the scaled combined motivation score was added to the Is value for each subject instead of being multiplied. The total value was then multiplied by the estimated Ps value. The formula for this operation would be written as follows: \( RT \ V = [(Ms - Maf) + Is] \times Ps. \) The RT scores were then employed as the basis for dividing the subjects into groups in an effort to determine if there were success differences. An alternative measure of RT V was employed also in the hope of improving the discriminative ability of this method. The only difference from the original method was the omission of Maf in the alternative measure.

6. **Resultant Tendency VI.** In the computation of RT VI the original theory was amended most drastically. The only factors considered in this method were the values for Ms and estimated Ps. These values were multiplied and the resulting figure used as the basis for group division. The formula for this method was simply \( RT \ VI = Ms \times Ps. \)

In each instance except RT V and RT VI the scores for the subjects were put into the following formula:
\[ RT = (Ms - Maf) \times [Ps \times (1 - Ps)]. \] RT V and RT VI used the revised formulas described above. In either case each procedure resulted in a score for resultant tendency which was then used to divide the groups and test for significance.
In all treatments in which the estimated probability of success was used the number of subjects was reduced from fourteen to eleven because of the failure by three subjects to make an estimation of success. Curiously, in each of the three cases the actual success score was quite low. It could be that the subjects knew that they probably would not do well but did not want to divulge this.

In summary then, the Mann-Whitney U Test was used in testing a total of nine hypotheses, three of which involved the stable characteristics, Ms and Maf, and six of which involved the resultant tendency computed by different methods. Each of the nine entities provided the basis of dividing the wrestlers into groups to determine if there were significant differences in success.

In a departure from Atkinson's theory, the data were subsequently treated on the basis of the degree to which each subject exhibited both the motive to achieve (Ms) and the motive to avoid failure (Maf). The scores for each motive were divided at the median and those scores above the median were designated as high while those below the median were designated as low. Each subject was therefore considered high or low on each of the two motives. This dichotomizing of the two motives yielded four categories: (1) high in Ms and low in Maf, (2) high in Ms and high in Maf, (3) low in Ms and low in Maf, (4) low in Ms and high in Maf. The success
scores of each group were compared with each of the other three groups by means of the Mann-Whitney U Test.

Spearman rank order correlations were computed between each of the nine aspects of the theory mentioned above and competitive spirit. Scores for competitive spirit were determined by combining and averaging all the values for each subject as rated by the coach and the team members.
CHAPTER IV

ANALYSIS OF THE DATA

At the outset it was believed that the possibility of demonstrating a relationship between achievement motivation and success in wrestling was quite good. It was also thought that certain components of the theory of achievement motivation might distinguish among a group of wrestlers with regard to success and might therefore be predictive of performance. Furthermore it was believed that the achievement motive might possibly be a valid measure of competitiveness in wrestling. The results of this study seem to partially confirm this initial speculation.

Hypothesis One

Hypothesis number one which predicted that the wrestlers who were high in the achievement motive would tend to have higher success scores than those with low achievement motive scores seems to have been supported to some degree as evidenced in Table 1.

The assumption upon which this hypothesis was based contended that the intensity of each subject's achievement motive would be reflected in wrestling success. Although a level of significance of .159 failed to reach the commonly
accepted standards, the difference in success scores between
the high and the low Ms groups should not be discounted
altogether. In view of the complexity of motives which each
person brings with him into a competitive situation, one
probably should not expect a great difference in complex
behavior to be evidenced based upon one motive. If a highly
significant difference between groups had been demonstrated
under these circumstances, it would have indeed been
remarkable.

Subsequent statistical treatment by means of a rank
order correlation revealed a positive relationship of .21
between Ms and success in wrestling. This finding was not
out of line with the results of studies which relate the
achievement motive to other types of behavior discussed in
Chapter Two.

Individual analysis of success scores revealed some
interesting observations. In spite of the fact that three
of the top four and five of the top seven performers also
had high achievement motives, the individual who was un-
questionably the best wrestler on the squad was not a member
of the high Ms group. Any attempted explanation beyond
attributing this to extrinsic factors would be pure conjec-
ture and would probably be unwise.

An interesting point not directly related to the
study but nevertheless worthy of mention might be found in
a comparison of the achievement motive scores of the
wrestlers with norms of other college males reported by
Atkinson.1 In the normative group of 207 college males the
mean Ms score was 6.10 which is considerably below the
wrestlers' mean Ms score which was found to be 8.07. The
standard deviation scores were 4.81 and 3.58, respectively.
It appears from this comparison that this group of wrestlers
may very well exhibit a greater degree of achievement motive
than other male college students. This is illustrated by the
additional fact that only four of the fourteen wrestlers had
scores below the normative mean. This speculation, however,
should be corroborated by research.

In summary then it can be said that even though the
achievement motive did not reliably differentiate among the
wrestlers in terms of success in performance, there was a
moderate tendency toward higher success scores for those who
were high in the achievement motive.

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Hypothesis Two

The prediction of hypothesis number two that the subjects who displayed high scores in the motive to avoid failure would be less successful than those with low Maf scores was not supported in this study. It was assumed in conformity to Atkinson's theory that all anxiety was detrimental to performance and would therefore be reflected in the success scores of the wrestlers. As demonstrated in Table 2 the division of subjects into groups on the basis of high and low anxiety levels tells one little about the wrestler's success.

<table>
<thead>
<tr>
<th>High Maf Group Success Scores</th>
<th>Low Maf Group Success Scores</th>
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<tbody>
<tr>
<td>62</td>
<td>78</td>
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<tr>
<td>32</td>
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<td>28</td>
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*U = 24*

*p < .500*

Further investigation by means of a Spearman rank order correlation revealed only a .08 negative correlation between anxiety and success in performance. This finding in conjunction with the failure to distinguish between groups would seem to disparage the assumption that all anxiety is debilitating to performance.
In view of this contradiction an effort was made to determine if the data of this study supported the inverted U-shaped configuration discussed in Chapter Two. Reviewing briefly, in this conception some anxiety is considered desirable or even essential up to a given point. Beyond this point additional anxiety detracts from performance. To test the hypothesis that the effect of anxiety upon performance assumes the pattern described above, the seven wrestlers with the middle range of Maf scores were placed into one group while the wrestlers with the seven extreme Maf scores, both high and low, were placed in the other group. A one-tailed Mann-Whitney U Test revealed a highly significant difference between groups as seen in Table 3.

TABLE 3
SUCCESS DIFFERENCE OF MIDDLE AND EXTREME ANXIETY GROUPS

<table>
<thead>
<tr>
<th>Middle Maf Group Success Scores</th>
<th>Extreme Maf Group Success Scores</th>
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<td>78</td>
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<td>53</td>
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<td>26</td>
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\[ U = 3 \]
\[ p < .002 \]

The highly significant results of this analysis strongly substantiates the hypothesis that some anxiety is essential to performance but that too much can be
debilitating. The results also tend to reject the concept that all anxiety affects performance adversely. This hypothesis received additional support in the form of subjective appraisal. The wrestlers were observed intermittently throughout the season and it was quite apparent that the two wrestlers with the highest Maf scores had significant problems. One of these wrestlers consistently would be ahead early in a match and subsequently lose usually by a fall. The other wrestler with a very high Maf score was troubled with frequent minor injuries throughout the season. One could not keep from wondering how many of the injuries were of a psychosomatic nature. It was as if this wrestler did not want to wrestle even though he was the best in his weight class. On the other hand the two wrestlers with the lowest Maf scores wrestled in a total of only five matches which would indicate a lack of drive, other things being equal. Moreover their competitive spirit scores were only 73 and 77—among the very lowest on the squad. From observing these two wrestlers neither would be described as a hustler. Of course, the subjectiveness of these observations detracts from their validity but in spite of possible bias, it would seem that the extremes of anxiety appear to affect wrestling performance in accordance with the above hypothesis.

Of little direct application to this study but of some interest is a comparison of the subjects' Maf scores
measured by the neuroticism scale of the Maudsley Personality Inventory with the norms for college males. This comparison revealed very little difference in the two groups. The mean score of the normative group was 20.66 while the wrestlers' mean was 21.29. The standard deviations were 10.65 and 10.31, respectively. This would indicate that the wrestlers very closely approximated the anxiety levels of the normative group.

**Hypothesis Three**

The third hypothesis forecast that the subjects with high combined motivation scores (Ms-Maf) would tend also to be more successful in wrestling than those with low combined scores. Groups divided on the basis of combined motivation failed to show appreciable success differences as seen in Table 4.

**TABLE 4**

SUCCESS DIFFERENCES OF HIGH AND LOW COMBINED MOTIVATION GROUPS

<table>
<thead>
<tr>
<th>High Ms-Maf Group Success Scores</th>
<th>Low Ms-Maf Group Success Scores</th>
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<tr>
<td>62</td>
<td>78</td>
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\[
U = 21 \\
p < .355
\]

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This treatment took into consideration both of the stable characteristics evoked in a competitive situation. It was assumed that if the theory were valid the combined scores would probably be more discriminative than the use of either Ms or Maf individually. It was thought that the groups divided on this basis would show more highly significant success differences than those reported in either hypotheses one or two above. The results proved this to be an invalid assumption since the difference evidenced in hypothesis one neared acceptable levels of significance while hypothesis three was considerably below this level.

The meaning of these results would seem to reinforce the position stated above in regard to the theory's conception of the role of anxiety in performance, that is, that all anxiety detracts from performance. If all anxiety detracted from performance, then the correction of Ms scores for anxiety should have produced an even better measure than the achievement motive alone. This did not prove to be true. Instead of producing more pronounced differences in success the results were even less discriminating. It might be said therefore that combined motivation (Ms-Maf) was not a valid means of predicting success for this group of college wrestlers.

Hypothesis Four

The fourth hypothesis predicted that the wrestlers with the highest resultant tendency (RT) scores would tend
to be more successful than the wrestlers with low RT scores.

Reviewing briefly, the computation of RT scores involves factors other than the stable characteristics (Ms and Maf). The situational variables, expectancy of success (Ps) and failure (Pf) and the incentive value of success (Is) and failure (If) were the other factors considered in the computation of RT following Atkinson's theory. Since the theory is somewhat inconclusive concerning the method of determining Ps, four alternative methods were employed in an effort to determine the most valid. Two additional efforts were made to revise the theory by rearranging or excluding certain aspects in an effort to make it more tenable. Because of the variety of approaches to the theory any consideration of RT was treated as a sub hypothesis and considered individually.

Sub Hypothesis A

It was the contention of this hypothesis that the wrestlers with high RT 1 scores would be more successful in wrestling than those with low RT 1 scores. This measure of resultant tendency was computed according to Atkinson's formula with a value of Ps based upon each wrestler's past record. It was assumed that if the theory of achievement motivation were valid the addition of the situational factors (Ps, Is, etc.) to the stable motives (Ms and Maf) would yield a more valid measure of predicting success than any of those considered above. Table 5 reveals the inaccuracy of this assumption.
TABLE 5
SUCCESS DIFFERENCES OF HIGH AND LOW GROUPS IN RESULTANT TENDENCY I

<table>
<thead>
<tr>
<th>High RT I Group Success Scores</th>
<th>Low RT I Group Success Scores</th>
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<tbody>
<tr>
<td>53</td>
<td>78</td>
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</table>

\[ U = 21 \]
\[ p < .355 \]

The failure of RT I to distinguish among the wrestlers or even to approach the level obtained by using only the Ms scores suggests that either the value for Ps based upon past record is not accurate or that something is wrong with the theory. An indication of an inconsistency in the theory can be seen in the fact that four of the top seven success scores belong to subjects in the low RT group. This is contrary to the theory which posits that those with higher RT scores will have a greater tendency to succeed. The contention that the theory is invalid was reinforced by the finding of a negative correlation of .13 with success. In summary, it can be said that RT I should not be considered a predictive measure of wrestling success.

Sub Hypothesis B

It was predicted in this hypothesis that the subjects having the highest RT II scores would tend to be more success-
ful than those who had low RT II scores. Resultant tendency II was computed in the same manner as RT I with the exception that values for Ps were based upon estimated success. The assumption being tested was identical to the previous hypothesis, that is, that RT II would yield an index which would be more discriminative than the use of Ms or Maf alone or in combination. From the results in Table 6 it would appear that this assumption was almost substantiated.

**TABLE 6**

SUCCESS DIFFERENCES OF HIGH AND LOW GROUPS IN RESULTANT TENDENCY II

<table>
<thead>
<tr>
<th>High RT II Group Success Scores</th>
<th>Low RT II Group Success Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>78</td>
</tr>
<tr>
<td>32</td>
<td>62</td>
</tr>
<tr>
<td>26</td>
<td>53</td>
</tr>
<tr>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>U = 7</td>
<td></td>
</tr>
<tr>
<td>p &lt; .089</td>
<td></td>
</tr>
</tbody>
</table>

An inspection of the individual scores however divulges a glaring inconsistency. Over half of the top scores again are found to be in the group with low RT II scores. Moreover, the success scores of each group if totaled overwhelmingly favor the low RT II group despite its smaller group size. Again the results may be attributed to the inaccuracy of the Ps values derived from the subjects' estimated success or, the results may indicate that the theory is invalid. On the first point, the methods of
determining a value for Ps recommended by Atkinson were compared and the results of the comparison favored the estimation of success over past record. Rank order correlations were done between each method and actual success which revealed a .97 positive correlation between estimated success and actual success. Past record correlated positively at a modest .38 level. From this it would seem that estimated Ps is a much better measure than Ps based upon past record.

On the second point mentioned above—the possible invalidity of the theory, it appears that a very good case to support this contention could be developed on the basis of the results revealed so far. The apparent error in the conception of the role of Maf in performance as well as the inverted directionality of RT scores would seem to point toward basic theoretical weaknesses. This matter however will be deferred until the remaining results have been discussed.

Concerning the usefulness of RT II as a predictive measure of wrestling success, because of the unexpected reversed directionality of RT scores it would probably be unwise to accept this method as valid even if the level of probability had met an acceptable level of confidence.

Sub Hypothesis C

It was the forecast of this hypothesis that subjects with high RT III scores would be more successful in wrestling than those with low RT III scores. In the computation of RT III the value of Ps was held constant at .50 for all
subjects based on the assumption in each match a wrestler has one chance in two of being successful. Group differences in success based upon RT III did not reach significance as seen in Table 7.

TABLE 7
SUCCESS DIFFERENCES OF HIGH AND LOW GROUPS IN RESULTANT TENDENCY III

<table>
<thead>
<tr>
<th>High RT III Group</th>
<th>Low RT III Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success Scores</td>
<td>Success Scores</td>
</tr>
<tr>
<td>62</td>
<td>78</td>
</tr>
<tr>
<td>53</td>
<td>32</td>
</tr>
<tr>
<td>38</td>
<td>28</td>
</tr>
<tr>
<td>11</td>
<td>26</td>
</tr>
<tr>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

\[ U = 20 \]
\[ p < .310 \]

Individual score analysis failed to reveal any difference worthy of mention. Additional treatment by means of a rank order correlation found a low and insignificant .12 positive relationship between RT III and success. In theory this method of computing resultant tendency should have maximized both the motive to achieve and the motive to avoid failure for each subject which should have in turn magnified the individual differences in these motives. It appears, however, that this method of computing resultant tendency failed to appreciably identify the more successful performance.
Sub Hypothesis D

In this treatment of resultant tendency it was hypothesized that the subjects with high RT scores would be more successful in wrestling than those with low RT scores. The basic assumption was that Ps was proportionate to college wrestling experience, that is, those who had the most college wrestling experience would be most successful. This assumption received very strong support from this study as revealed in Table 8.

TABLE 8
SUCCESS DIFFERENCES OF HIGH AND LOW GROUPS IN RESULTANT TENDENCY IV

<table>
<thead>
<tr>
<th>High RT IV Group Success Scores</th>
<th>Low RT IV Group Success Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>78</td>
<td>28</td>
</tr>
<tr>
<td>62</td>
<td>14</td>
</tr>
<tr>
<td>53</td>
<td>11</td>
</tr>
<tr>
<td>38</td>
<td>6</td>
</tr>
<tr>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
</tr>
</tbody>
</table>

U = 3
p < .002

The analysis of individual success scores revealed that six out of seven of the top scores were from the high RT IV group. In addition, the success totals of the two groups were vastly different. Further analysis revealed a positive correlation of .82 between RT IV and success. Upon speculating why RT IV is the best of the measures considered so far, it appears that the difference can be attributed only
to the Ps values. It appears that experience is a key factor in predicting success. This conclusion seems warranted in view of the fact that all other factors in the computation had been used previously with considerable less facility for distinguishing between groups. It would appear therefore that, of the measures discussed, RT IV is by far the most valid as a predictive measure of success in wrestling.

Sub Hypothesis E

It was the prediction of this hypothesis that high RT V scores would tend to be associated with greater success in wrestling while lower RT V scores would tend to be associated with less success. It was speculated that possibly the resultant tendency score would be more accurate if the Is value were added to the combined motivation score rather than serving in a multiplicative capacity. The results did not show an appreciable difference between groups divided on the basis of RT V scores as indicated in Table 9.

The lack of discriminative ability of RT V could be probably attributed most of all to the use of Maf in its computation. Since it has already been established that the theory's concept of Maf should be viewed with some suspicion, these results seem to lend additional support to this suspicion. An alternative measure of RT V which omitted the Maf scores but which otherwise was identical to RT V was computed which yielded a probability of less than .214. This improvement could be attributed only to the omission of Maf
from the computation of RT V and would therefore tend to again reject the present conception of the role of anxiety in achievement performance. Of some interest, the original RT V scores correlated positively with success at .18 while a positive .40 correlation was found between the alternative measure and success. In summary, it can be said that RT V is not an accurate measure of success in wrestling. Further, the alternative measure of RT V, although seemingly a better measure, cannot be considered a valid predictive measure of success.

Sub Hypothesis F

In view of the comparative lack of ability to distinguish among the wrestlers using the theory intact or by arranging the various aspects of the theory it was decided to amend the theory in this instance by considering only Ms and Ps in computing RT scores. This hypothesis speculated that subjects high in RT VI scores would exhibit greater success than those low in RT VI. It was thought that this measure
might provide an easily computed yet valid predictive measure of success since both Ms and estimated Ps appeared to be the most consistent factors of the theory. The results as seen in Table 10 seem to indicate that this may very well be true.

**TABLE 10**

SUCCESS DIFFERENCES IN HIGH AND LOW RESULTANT TENDENCY VI GROUPS

<table>
<thead>
<tr>
<th>High RT VI Group Success Scores</th>
<th>Low RT VI Group Success Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>78</td>
<td>32</td>
</tr>
<tr>
<td>62</td>
<td>12</td>
</tr>
<tr>
<td>53</td>
<td>11</td>
</tr>
<tr>
<td>38</td>
<td>2</td>
</tr>
<tr>
<td>28</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td></td>
</tr>
</tbody>
</table>

\[ U = 2 \]
\[ p < .009 \]

The great difference in high and low RT VI groups is readily apparent from the inspection of individual scores. Only one of the top seven scores was found in the low RT VI group. Furthermore additional treatment revealed a respectable positive correlation of .68 between RT VI and success scores. From this it would appear that RT VI could be a promising technique for predicting success in wrestling.

Departing briefly from the theory of achievement motivation, it was decided in view of an obvious relationship between expected success and actual success to analyze groups divided on the basis of estimated success in an effort to see if the groups so divided would be significantly different
in actual wrestling success. Results shown in Table 11 strongly support the contention that those who have higher expectancies for success tend to perform more successfully.

TABLE 11
SUCCESS DIFFERENCES IN HIGH AND LOW ESTIMATED SUCCESS GROUPS

<table>
<thead>
<tr>
<th>High Ps Group</th>
<th>Low Ps Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success Scores</td>
<td>Success Scores</td>
</tr>
<tr>
<td>78</td>
<td>26</td>
</tr>
<tr>
<td>62</td>
<td>12</td>
</tr>
<tr>
<td>53</td>
<td>11</td>
</tr>
<tr>
<td>38</td>
<td>2</td>
</tr>
<tr>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

U = 0
p < .002

Analysis of individual scores revealed that all of the top six scores are from the high Ps group. Further analysis revealed a positive rank order correlation of .97 between estimated Ps and success.

It would seem from these results that among the best predictive measures of success would be the subject's own estimate of performance. The results are indicative of a great deal of insight on the part of the wrestlers as to their chances of winning or losing over the course of the season.

Stimulated by the discriminative ability of the wrestlers in predicting their own success level, it was decided to see if another subjective measure, competitive spirit, determined by the coach's and team members' ratings
would be as accurate. Groups divided on the basis of assigned values of competitiveness differed significantly beyond the .05 level as seen in Table 12.

TABLE 12
SUCCESS DIFFERENCES IN HIGH AND LOW COMPETITIVE SPIRIT GROUPS

<table>
<thead>
<tr>
<th>High Competitive Spirit Group</th>
<th>Low Competitive Spirit Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success Scores</td>
<td>Success Scores</td>
</tr>
<tr>
<td>78</td>
<td>32</td>
</tr>
<tr>
<td>62</td>
<td>26</td>
</tr>
<tr>
<td>53</td>
<td>14</td>
</tr>
<tr>
<td>38</td>
<td>6</td>
</tr>
<tr>
<td>28</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
</tr>
</tbody>
</table>

\[ U = 7 \]
\[ p < .013 \]

A positive rank order correlation of .78 was found between the subjective measure of competitive spirit and success. Although seemingly a valid predictive measure of success, these results should be viewed with some reservation. It could be that wrestlers who won most often were assigned higher score for competitive spirit, that is, the raters allowed won-loss record to influence their subjective ratings of competitive spirit. On the other hand it could mean that the wrestlers who display greater amounts of this quality tend to perform more successfully.

To summarize briefly the results to date, it can be said that neither the motive to achieve nor the motive to avoid failure when used alone or combined satisfactorily
differentiated among the wrestlers in terms of success. Moreover, the theory of achievement motivation computed in the method described by Atkinson also failed to be discriminative. By manipulating or eliminating certain parts of the theory it was possible to attain some degree of discernment in success. The results of the above are summarized in Table 13 and 14.

**TABLE 13**

**GROUP DIFFERENCES IN WRESTLING SUCCESS**

<table>
<thead>
<tr>
<th>Motivation Factor</th>
<th>U</th>
<th>p &lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motive to achieve success</td>
<td>16</td>
<td>.159</td>
</tr>
<tr>
<td>Motive to avoid failure</td>
<td>24</td>
<td>.500</td>
</tr>
<tr>
<td>Combined motivation</td>
<td>21</td>
<td>.355</td>
</tr>
<tr>
<td>Resultant tendency I</td>
<td>21</td>
<td>.355</td>
</tr>
<tr>
<td>Resultant tendency II</td>
<td>7</td>
<td>.089</td>
</tr>
<tr>
<td>Resultant tendency III</td>
<td>20</td>
<td>.310</td>
</tr>
<tr>
<td>Resultant tendency IV</td>
<td>3</td>
<td>.002</td>
</tr>
<tr>
<td>Resultant tendency V</td>
<td>13</td>
<td>.396</td>
</tr>
<tr>
<td>Resultant tendency VI</td>
<td>2</td>
<td>.009</td>
</tr>
</tbody>
</table>
TABLE 14

SPEARMAN RANK CORRELATION COEFFICIENTS BETWEEN MEASURES OF ACHIEVEMENT MOTIVATION AND WRESTLING SUCCESS

<table>
<thead>
<tr>
<th>Motivation Factor</th>
<th>rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motive to achieve success</td>
<td>.21</td>
</tr>
<tr>
<td>Motive to avoid failure</td>
<td>-.08</td>
</tr>
<tr>
<td>Combined motivation</td>
<td>.13</td>
</tr>
<tr>
<td>Resultant tendency I</td>
<td>-.13</td>
</tr>
<tr>
<td>Resultant tendency II</td>
<td>-.62</td>
</tr>
<tr>
<td>Resultant tendency III</td>
<td>.12</td>
</tr>
<tr>
<td>Resultant tendency IV</td>
<td>.82</td>
</tr>
<tr>
<td>Resultant tendency V</td>
<td>.18</td>
</tr>
<tr>
<td>Resultant tendency VI</td>
<td>.68</td>
</tr>
</tbody>
</table>

Configuration of Motives and Success

Since a satisfactory relationship between the theory of achievement motivation and wrestling success could not be found without amending the theory, it was decided to analyze the data in still another way using only Ms and Maf. The subjects were divided into four groups on the basis of the strength or weakness of each of the motives. Each group was then compared with the other three to determine if there were differences in success. The results of this analysis can be seen in Table 15.

As revealed in Table 15, the comparison between the high Ms, low Maf group and the low Ms, high Maf group yielded a highly significant difference. Two other comparisons also
TABLE 15
CONFIGURATION OF MOTIVES AND SUCCESS DIFFERENCES

<table>
<thead>
<tr>
<th>Motivation Categories</th>
<th>U</th>
<th>p&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Ms, low Maf</td>
<td>0</td>
<td>.028</td>
</tr>
<tr>
<td>Low Ms, high Maf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Ms, low Maf</td>
<td>1</td>
<td>.133</td>
</tr>
<tr>
<td>High Ms, high Maf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Ms, low Maf</td>
<td>4</td>
<td>.095</td>
</tr>
<tr>
<td>Low Ms, low Maf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Ms, high Maf</td>
<td>7</td>
<td>.500</td>
</tr>
<tr>
<td>Low Ms, low Maf</td>
<td>2</td>
<td>.429</td>
</tr>
<tr>
<td>Low Ms, high Maf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Ms, high Maf</td>
<td>2</td>
<td>.400</td>
</tr>
</tbody>
</table>

approached an acceptable level of confidence. On the basis of these results it could be said with some reservation that wrestlers who measure high in Ms and low in Maf will in all likelihood be more successful than those wrestlers who are low in Ms and high in Maf. The former group will also tend to perform more successfully than either the high Ms, low Maf group or the low Ms, low Maf group. The principal reason for expressing reservation in generalizing from these results lies in the small number of subjects in each of the groups. Additional research is needed using a larger number of subjects. It is quite likely that group differences will be even more pronounced with larger groups.
Hypothesis Five

It was the prediction of the fifth hypothesis that there would be a positive correlation between the achievement motive and a subjective measure of competitive spirit. The assumption upon which the hypothesis was based contended that competitiveness and the motive to achieve were closely related and would likely be evoked to a similar degree in wrestling competition. The results as seen in Table 16 mildly support this contention. A positive correlation of only .44 between competitiveness and the achievement motive could suggest a number of things. There is a definite possibility that the collective evaluation of competitive spirit is not valid. There is also the possibility that the achievement motive has little impact upon competitiveness. It may also be that the achievement motive is of lesser importance than some other motive or motives in the desire to win in a wrestling match. This correlation is nonetheless comparable to those reported in Chapter Two and should not be discounted altogether.

Hypothesis Six

The sixth hypothesis expected a negative correlation between the motive to avoid failure and competitive spirit. This expectation did not prove to be true in this study. Instead a very low and insignificant positive correlation of .01 was found for this group of athletes. Assuming the measure of competitiveness to be valid, this finding may
### TABLE 16

**SPEARMAN RANK CORRELATIONS BETWEEN ASPECTS OF ACHIEVEMENT MOTIVATION AND COMPETITIVE SPIRIT**

<table>
<thead>
<tr>
<th>Motivation Factor</th>
<th>rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motive to achieve success</td>
<td>.44</td>
</tr>
<tr>
<td>Motive to avoid failure</td>
<td>.01</td>
</tr>
<tr>
<td>Combined motivation</td>
<td>.41</td>
</tr>
<tr>
<td>Resultant tendency I</td>
<td>.13</td>
</tr>
<tr>
<td>Resultant tendency II</td>
<td>-.54</td>
</tr>
<tr>
<td>Resultant tendency III</td>
<td>.31</td>
</tr>
<tr>
<td>Resultant tendency IV</td>
<td>.78</td>
</tr>
<tr>
<td>Resultant tendency V</td>
<td>.44</td>
</tr>
<tr>
<td>Resultant tendency VI</td>
<td>.72</td>
</tr>
</tbody>
</table>

have some relevance to the point made earlier concerning the role of anxiety in performance. It could be argued that if a respectable negative correlation had been found it would have lent support to Atkinson's view of anxiety, that is, all anxiety is debilitating and therefore detracts from performance. It could be argued that relatively no correlation would tend to support the idea of an inverted U-shaped configuration in describing the role of anxiety in performance.

**Hypothesis Seven**

The seventh hypothesis which anticipated a positive correlation between combined motivation (Ms-Maf) and competitive spirit was very modestly supported in this study. The
positive correlation of .41 revealed in Table 16 failed to confirm the assumption that the combined measure would show a greater correlation than Ms or Maf used alone.

**Hypothesis Eight**

The eighth hypothesis predicted positive correlations between the several resultant tendency measures and competitive spirit. This prediction was only partially supported.

A low positive correlation of .13 was demonstrated between RT I and competitive spirit while RT II correlated negatively at .54. The difference between these two correlations can be attributed to the different values for Ps and Is used in their computations. Past record was the basis for Ps in the former and estimated record in the latter. In attempting to determine the better measure both were correlated with competitive spirit. The results were similar to those obtained when the same measures were correlated with success. A positive correlation of .13 was found for Ps based on past record while estimated Ps correlated a positive .83 with success.

About all that can be said about the significant negative correlation between RT II and competitive spirit is that it can be viewed as additional evidence of the invalidity of the present conception of the theory.

RT III which utilized fixed values for Ps and Is was found to correlate with competitive spirit at a low and insignificant .31 while RT IV which was computed with a fixed
value for Is and Ps scores based upon experience was found to correlate positively at .78. These results would indicate that certain changes in the theory can bring about increased correlation with competitive spirit. This would seem again to imply a basic inadequacy in the theory. One of the more obvious inferences which can be drawn from the treatment of RT IV is that experience and competitive ability seem to be very closely akin. In fact, one might be led to conclude that RT IV is a valid measure of competitive spirit. Indeed this is a higher correlation than the one reported by Booth in Chapter Two. However, it should be pointed out that until additional research is done one should probably view this relationship with reservation. One of the reasons for some skepticism on the part of the writer resides in the importance of experience in the derivation of RT V scores. At the common sense level it appears that the quality called competitive spirit in many cases transcends experience and seems to be a characteristic of personality rather than a function of experience.

A moderately low positive correlation was found between RT V and competitive spirit while a respectable .72 positive correlation was found between RT VI and competitiveness. Because of the wide difference in correlation between these two RT measures one might conclude that the omission of Maf and Is from the computation would tend to yield more meaningful results. The respectable positive
correlation found between RT VI and competitive spirit is encouraging but should still be viewed with some skepticism. It is very likely that the high degree of correlation is due largely to the effect of the Ps values rather than to the achievement motive scores.

In summary then, the only findings of significance relating achievement motivation to competitive spirit were two positive correlations involving RT IV and RT VI and the negative correlation involving RT II. From the results it can be inferred that the achievement motive, college wrestling experience, and the expectancy of success tend to be associated with competitiveness.

Observations

Consideration should probably be given to the effect of the overall success of the team upon the performance of team members. It would be very difficult if not impossible, however, to determine the influence of the lower division finish in the conference or the slightly under .500 dual meet record upon individual success and competitiveness. There is a strong possibility that this influence might be considerable yet it would seem that in wrestling where the performance of teammates has no direct bearing upon another's performance the influence would be minimized in comparison with a sport requiring intricate teamwork. The wide range of success scores of this group of wrestlers did not reflect a
discernible team influence. One subject wrestled regularly but won only one match while another was undefeated and was voted the outstanding wrestler in the conference. The others who could be considered regulars ranged between these two extremes. In essence then it can be said that the influence of team success upon the success of the individual wrestlers was inapparent in this study.

It would also be very difficult to estimate the effect which the six wrestlers who were dropped from the study would have had upon the results of the study. An inspection of the Ms and Maf scores of the six revealed that both high and low scores in each of the motives were in evidence. In other words, no particular pattern in motivation scores could be detected from the inspection of individual scores. Probably worthy of mention, however, is the fact that five of the six who were not included either estimated their won-loss record to be .000 or failed to make any estimation at all. This would seem to reinforce the contention that estimated Ps is one of the best means of predicting success. All of those who left the squad saw their chances of competing as slight while two of those who remained but were not included in the study made the same evaluation.

As a whole the subjects responded well during the testing period. There seemed to be a great deal of effort expended in trying to write good stories on the TAT. There was, however, some evidence during the testing period of
bewilderment as to what the TAT pictures had to do with wrestling. The French Test of Insight might provide a valid measure of the achievement motive while avoiding this reaction. Several subjects expressed a continuing interest in the study and were eager to learn of the results. To those interested an opportunity was afforded to discuss individual test results.
CHAPTER V

SUMMARY AND CONCLUSIONS

Statement of the Problem

It was the purpose of this study to explore the relationship between the several aspects of achievement motivation and success in college wrestling. A second concern was the relationship between the same components of achievement motivation and competitive spirit.

Procedure

Fourteen varsity wrestlers from the Ohio State University participated as subjects in the study. Near the beginning of the wrestling season the achievement motive and the motive to avoid failure were assessed by means of the Thematic Apperception Test and the neuroticism scale of the Maudsley Personality Inventory, respectively. At the same time information necessary for the computation of resultant tendency to achieve success was obtained. Near the end of the season the wrestlers rated themselves and the other squad members on competitive spirit. A similar rating was obtained from the varsity coach on this factor. Computed at the end of the season for each subject was a success factor based upon the number of matches wrestled and the
outcome of each match. The relationship between success and several aspects of the theory of achievement motivation was investigated by means of the Mann-Whitney U Test and Spearman rank correlations. The Mann-Whitney U Test was also used to explore the differences between groups based on the configuration of Ms and Maf. Spearman rank correlations were computed between competitive spirit and the same aspects of the theory.

Results

Analysis of the data revealed that even though the achievement motive did not reliably predict success in wrestling there was a decided tendency toward higher success scores being associated with higher achievement motive scores. Of tangential interest, it was found that the subjects of this study were substantially higher than a normative group of college males in achievement motive scores.

The results of this study failed to support the theory that all anxiety is detrimental to performance while lending support to the theory that a minimum of anxiety is essential to optimal performance but too much anxiety is deleterious. A comparison between the anxiety scores of the subjects and normative scores revealed no appreciable difference in mean scores.

Combined motivation which involved both the achievement motive and the motive to avoid failure proved to be ineffectual as a predictive measure of wrestling success.
It was initially speculated that combined motivation would be more discriminating than the use of either Ms or Maf used singly since it considered both of these motives. This speculation was not supported, in fact, combined motivation was found to be considerably inferior to Ms.

Resultant tendencies I and II, computed according to Atkinson's formulation, failed to reach accepted levels of significance in testing group success differences. With both methods there was a tendency for lower RT scores to be associated with higher success scores—quite contrary to the theory. The primary difference between RT I and RT II was in the use of different values for probability of success. A comparison of the two methods of determining probability of success recommended by Atkinson revealed the subject's estimation of success to be far superior to past record.

The arbitrary assignment of values for probability of success produced contrasting results. Using a fixed value of Ps for all subjects, RT III produced no significant success differences while RT IV which used Ps values based upon college wrestling experience yielded highly significant success differences. The greater effectiveness of RT IV over RT III was attributed to the validity of wrestling experience as a factor in predicting success.

The altered arrangement of achievement motivation factors attempted in RT V proved ineffective in producing group success differences. An alternate form of RT V which
omitted Maf scores in the computation of resultant tendency scores was found to be more discriminative but still somewhat below accepted levels of significance.

Resultant tendency VI, a drastically amended version of the theory which considered only the achievement motive and estimated probability of success, was found to produce group differences in success which were significant beyond the .01 level. Two other measures, although not qualifying as RT measures due to the omission of achievement motivation factors, were found also to yield significant success differences. It was found that estimated success when used as a basis for group division is very predictive of actual success. This study revealed that subjects who predicted higher success scores were more successful in wrestling performance. Similarly, a subjective measure of competitive spirit based upon the wrestlers' and the coach's ratings was found to convincingly identify the more successful wrestlers.

Subjects divided into four groups on the basis of strength or weakness of the achievement motive and the motive to avoid failure were found to differ modestly with one notable exception. The only success difference of significance in this treatment was found between the group high in Ms and low in Maf and the group low in Ms and high in Maf. It was indicated, however, that the former group tended to be more successful than the remaining two groups.
Spearman rank correlations between the above aspects of achievement motivation and competitive spirit revealed only three coefficients which reached significance. A negative correlation of .54 was found with RT II while positive correlations of .78 and .72 were established with RT IV and RT VI, respectively. Although the positive correlation of .44 which was found between the achievement motive and competitive spirit was not statistically significant, the comparability of that figure to the results of other studies was emphasized.

Conclusions

The results of this study seem to warrant the following conclusions:

1. The achievement motive, although tending to be associated with success, cannot be considered a valid predictive measure of success in college wrestling.

2. In view of the results reported in this study which rejected the conception of the theory of achievement motivation regarding the effect of anxiety upon performance in wrestling while supporting an alternative conception, it is therefore indicated that the current conception of anxiety represents a possible weakness in the theory of achievement motivation.

3. The inability of the theory of achievement motivation to predict wrestling success can be attributed in part to a theoretical inaccuracy in the arrangement of the
situational factors—probability of success and incentive value of success.

4. The possibility of predicting success in wrestling can be enhanced by making certain alterations or deletions in the theory of achievement motivation. The use of estimated success and/or the number of years of college wrestling experience as measures of probability of success facilitate the predictive ability of resultant tendency measures.

5. One of the most accurate means of differentiating among wrestlers without considering situational factors is the method described as configuration of motives, that is, the relative strengths of both the achievement motive and the motive to avoid failure. Although the results of this study were only partially conclusive concerning this method it is likely that configuration of motives would provide a valid means of predicting wrestling performance.

6. The achievement motive seems to be modestly related to competitive spirit although it should not be considered a highly valid measure of it. The significant relationships found between two measures of resultant tendency and competitive spirit can probably be attributed more to the effects of the values of probability of success than to the effects of the achievement motive.
Recommendations for Further Study

It is believed that the theory of achievement motivation has wide potential applicability in the area of physical education and athletics in spite of the somewhat disappointing results of the present study. In order for this potential to be realized a great deal of additional research will be necessary. It is suggested that a similar study be undertaken in an effort to confirm or refute the conclusions stemming from this research effort. In such a study a larger number of subjects would probably have the effect of making group differences more pronounced.

Probably one of the most fruitful areas of future research studies in achievement motivation would be in the experimental arrangement of theoretical factors. As hopefully demonstrated in this study there is quite likely a better arrangement of factors than the one which is currently advocated. It is highly possible that the best arrangement of the achievement motive, the motive to avoid failure as well as the situational factors expectancy of success and incentive value of success is yet to be found. The application of a more valid concept of the motive to avoid failure to the theory would seem to be one of the most obvious research needs of the immediate future.

Profitable research could also be done which relates achievement motivation to a wide range of physical education and athletic activities. Different sports could be compared:
individual sports to team sports, combative sports to racquet sports, etc. In a team sport such as football the various positions could be compared for differences in the achievement motive. Similarly, in track the different events could be profitably contrasted. Information revealed from such analysis could prove to be very useful to the coach.

Some very basic questions should be answered which have to do with the effects of achievement motivation upon the individuals who compete in the various sports activities. Do certain sports attract individuals with high achievement motivation more than other sports? Do athletes at the various levels of competition differ from non-athletes in this characteristic of personality? Do athletes who receive financial assistance differ from those who do not in this motive? What is the relationship between the achievement motive and physical fitness? Do individuals with high levels of achievement motivation learn activity skills more quickly?

Other research efforts might be devoted to the development of valid instruments for measuring the achievement motive which are specific to the area of physical education and athletics. The instruments which are currently available yield an achievement motive score which is general in nature, that is, they supposedly measure the individual's motive to achieve in all phases of human endeavor. It would seem that an instrument which taps an individual's achievement motive only as it relates to physical activity would
produce much more valid research results in this area.

Further investigation of the relationship between achievement motivation and competitive spirit is recommended. It is quite possible that the need for power or some other basic motive, when considered in conjunction with the achievement motive, could very closely approximate competitive spirit.
APPENDIX A

GENERAL INFORMATION AND INSTRUCTIONS

This is a research study concerned with certain psychological characteristics of collegiate wrestlers. With due respect to physique and physical ability it is assumed that certain characteristics other than one's physical capacities and skills play an important part in athletic performance.

Although it may seem obvious that psychological factors contribute significantly to athletic performance, little is known about this relationship due to a lack of systematic research in this area.

Since it would be quite prohibitive to attempt an extensive and completely comprehensive measurement of each of you, it was decided to limit this study to only two factors—attitude and imagination. An effort will be made to establish the relationship between these two variables and performance in college wrestlers.

It is felt that with a greater understanding of the psychology of athletic performance better coaching and teaching techniques can be devised which should lead to improved performance.
We hope that you will cooperate with us in this effort by answering all of the questions to the best of your ability. By doing so you could conceivably be making a valuable contribution to the sport of wrestling.
APPENDIX B

INSTRUCTIONS FOR THE THEMATIC APPEARCEPTION TEST

"This is a test of your creative imagination. A number of pictures will be projected on the screen before you. You will have twenty seconds to look at the picture and then about four minutes to make up a story about it. Notice that there is one page for each picture. The same four questions are asked. They will guide your thinking and enable you to cover all the elements of a plot in the time allotted. Plan to spend about a minute on each question. I will keep time and tell you when it is about time to go on to the next question for each story. You will have a little time to finish your story before the next picture is shown.

"Obviously there are no right or wrong answers, so you may feel free to make up any kind of a story about the pictures that you choose. Try to make them vivid and dramatic, for this is a test of creative imagination. Do not merely describe the picture you see. Tell a story about it. Work as fast as you can in order to finish in time. Make them interesting. Are there any questions? If you need more space for any question, use the reverse side."1

1McClelland, The Achievement Motive, p. 98.
APPENDIX C

Name ______________________ Age __ Major Field ____________

Hometown_________ High School attended__________

High school varsity won-loss record_________________________

Number of varsity letters at Ohio State________________________

College varsity won-loss record to date________________________

Estimated won-loss record for this year (based on
dual meets)_________________________________

Marital status_____________________________________

Father's occupation_____________________________________

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APPENDIX D

TWO-FACTOR RATING SCALE

<table>
<thead>
<tr>
<th>Competitive Spirit (The determination to win in a match)</th>
<th>Performance Ratio (Ratio between performance and one's potential)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Angelo, Leonard</td>
<td></td>
</tr>
<tr>
<td>2. Romano, Frank</td>
<td></td>
</tr>
<tr>
<td>3. Young, Roger</td>
<td></td>
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<tr>
<td>4. Elliott, David</td>
<td></td>
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<tr>
<td>5. Grooves, Tom</td>
<td></td>
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<tr>
<td>6. Dorl, Richard</td>
<td></td>
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<tr>
<td>7. Mahoney, Mike</td>
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<td>8. Guzzell, Stan</td>
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<td>9. Wolff, Howard</td>
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<tr>
<td>10. Grimes, Steve</td>
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<tr>
<td>11. Burt, Chris</td>
<td></td>
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<tr>
<td>12. Cummings, Ed</td>
<td></td>
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<tr>
<td>13. Hughes, Roger</td>
<td></td>
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<tr>
<td>14. Kruse, Tom</td>
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<tr>
<td>15. Ewell, John</td>
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<tr>
<td>16. Hart, Randy</td>
<td></td>
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<tr>
<td>17. Schmidlin, Paul</td>
<td></td>
</tr>
</tbody>
</table>

Please rate each person on a 0-100 point scale.

Example: Doe, John  70  60

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Books


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