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SUCCESS AND SATISFACTION OF MEMBERS OF SELECTED
ADULT MALE BOWLING TEAMS REGISTERED WITH THE
GREATER GREENSBORO BOWLING ASSOCIATION AND THEIR
TASK AND AFFILIATION MOTIVATION.

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SUCCESS AND SATISFACTION OF MEMBERS OF SELECTED
ADULT MALE BOWLING TEAMS REGISTERED WITH THE
GREATER GREENSBORO BOWLING ASSOCIATION AND
THEIR TASK AND AFFILIATION MOTIVATION

by

Bert C. Piggott

A Dissertation Submitted to
The Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

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May, 1975

Approved by

Earl M. Dennis

APPROVAL PAGE

This dissertation has been approved by the following
committee of the Faculty of the Graduate School at The University of
North Carolina at Greensboro.

Dissertation Adviser Gail M. Dennis

Committee Members Marcus K. Pollock

Joseph E. Bryson

C. W. Wood

Rosemary McGee

May 12, 1975
Date of Acceptance by Committee

PIGGOTT, BERT CODY. Success and Satisfaction of Members of Selected Adult Male Bowling Teams Registered With the Greater Greensboro Bowling Association and Their Task and Affiliation Motivation. (1975) Directed by: Dr. Gail M. Hennis. Pp 104

It was the purpose of this study, conducted at the University of North Carolina at Greensboro during the Spring of 1974, to investigate success and satisfaction of adult male bowlers and their task and affiliation motivation. It was hypothesized that high task and high affiliation motivated adult male bowlers are more successful and satisfied than low task and low affiliation motivated adult male bowlers.

The subjects were one hundred six adult male bowlers. All of them lived in Greensboro, North Carolina or within twenty miles of the corporate limits of the city. Each subject was a member of the Metro 850 or Century League, sanctioned by the American Bowling Congress and registered with the Greater Greensboro Bowling Association. All of the subjects bowled in the Brunswick Friendly Lanes establishment.

Task and affiliation motivation and satisfaction were assessed by a modified version of Marten's Competition and Participation Relations Questionnaire. The final bowling averages for the 1973-1974 bowling season served as the measure of success. Lynn's Achievement Motivation Questionnaire was used to collect data which were utilized in designating the low and high achievers. Data on personal attributes, bowling mechanics and skill were collected on a demographic questionnaire designed for that purpose.

All statistical computations were accomplished through the computer terminal at the University of North Carolina at Greensboro which uses the Triangle Universities Computer Center. The Statistical

Analysis System Program was used in conjunction with the computer for all computational work. The significance level was set at the .05 critical value. Analysis of variance and correlation were the statistical techniques employed. Descriptive statistics were used to define the nature of the population in terms of age, education, occupation, bowling techniques, and bowling skills and achievement.

Results emanating from task and affiliation data supported the hypothesis which predicted that high task motivated adult male bowlers are more successful than low task motivated adult male bowlers. None of the other main effects was statistically significant.

Results from the achievement motivation data confirmed that high task motivated bowlers are also classified as high achievers. The hypothesis, which predicted that high affiliation motivated adult male bowlers are more successful than low affiliation motivated bowlers, was supported. High affiliation motivated bowlers were also classified as high achievers.

There was no relationship among the dependent variables of success, satisfaction and achievement motivation.

Within the limitations of this study, the following conclusions were drawn:

1. High task motivated adult male bowlers associated with the Metro 850 and Century Leagues were more successful bowlers than low task motivated adult male bowlers associated with the same leagues.
2. Affiliation motivation does not influence, either positively or negatively, the success of high task-motivated adult male bowlers associated with the Metro 850 and Century Leagues.

This Dissertation is Dedicated to
my wife, Lucille and my son, Bert Jr.

ACKNOWLEDGMENTS

The writer wishes to express grateful acknowledgment to the many persons who made this study possible. A special acknowledgment is directed to Dr. Gail M. Hennis for her staunch, untiring support and delicate guidance during the conduct of the study.

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CHAPTER I

INTRODUCTION

The rapid growth of interest in psychological and sociological aspects of athletic participation as a determinant of success gained its impetus in European Countries. The Europeans have produced a number of interesting studies in the area of the psychology of the athlete. However, many of the studies present very little statistical evidence to support their findings (Vanek, 1970; Schnellback-Nordmann, 1970). Interest in psychological research on athletes and performance from a non-physical aspect has grown rapidly in the United States (Ogilvie, 1968; Peterson, Weber & Trousdale, 1967).

Motivation is one of the tools used by coaches in the preparation of athletes for competition. However, Tutko & Ogilvie (1967) found that among the many responsibilities of a coach, motivation was believed to be the most complex and puzzling. There are many reasons why people are motivated to associate together in groups. Participation in any group consists of two distinguishable clusters of motives: Task motivation and Affiliation motivation (Hollander, 1967). High task motivation is characterized by an individual who is primarily interested in joining others for the purpose of achieving a mutual goal. Of secondary importance to a high task motivated individual is his relationship with the other members of the group. High affiliation motivation is characterized by an individual who is primarily attracted to the group as a source of social contact and approval.

Bowling appears to be a sport which would be attractive to persons seeking a source of association with others for the purpose of achieving mutual goals and gaining social contact and approval. Bowling has become one of America's most popular year-round sports. Statistics released by the American Bowling Congress (hereafter referred to as the ABC) indicated that in 1972-1973, over 4,150,000 male bowlers; 3,343,965 women bowlers; and 720,639 junior bowlers paid sanction fees. (Twenty-First Annual American Bowling Congress Yearbook, 1974)

There are several reasons why bowling appeals to those who participate in it. Most important is the fact that bowling is strictly an offensive sport. Participants enjoy the challenge of continually rolling a ball at a stationary target while not being distracted by having to perform defensive maneuvers. Second, each participant is completely dependent upon his own skill and expertise for achieving success and satisfaction in the sport. Third, success in the sport is directly related to how well an individual can make minute adjustments during successive deliveries of the bowling ball. Bowlers are able to make adjustments on subsequent deliveries because they are always in a position to observe the immediate results of each delivery. Immediate knowledge of results tends to enhance the effectiveness of subsequent performance (Bilodeau & Bilodeau, 1961). Theoretically, considering the effect of constant practice, a bowler should be able to improve his skill and effectiveness during the course of a 35-week bowling season; thus, improving his final bowling average.

Adult male bowlers possessing high levels of skill in bowling like to band together in teams and leagues. This approach permits them to participate with and compete against bowlers possessing similar skills and abilities. In a recent study on prognostic models of sport in Socialist Countries, Wohl (1971, p. 28) stated, "Competition reflects human motives for participation in sport, human aspirations to bring to the light of day one's own skill and to prove oneself in unhampered, free game, in confrontation with the same aspirations and desires of others." Ogilvie (1964, p. 428) contended, "The psychological driving forces which support the need to compete in athletics are probably unique for each participant."

Highly motivated bowlers enjoy bowling against established standards of excellence and are constantly in pursuit of elusive, perfect-game scores of 300. However, it is interesting to note that most bowlers are quite satisfied to achieve game scores of 200 or more. Skilled bowlers consider single-game scores of 200 and set scores of 600 to be excellent indices of personal achievement. A final seasonal average of 170 is accepted as a respectable average. The ABC sponsors an annual bowling tournament which is open to all male, sanctioned bowlers. The most popular team division of the tournament is the "Booster" division. Any five-man team possessing a combined average of not more than 850 may enter this division. This, theoretically, presupposes that each bowler on a team could carry an average of 170.

It is conceivable to assume that each adult male bowler registered in the Greater Greensboro Bowling Association (hereafter referred to as the GGBA) is interested in achieving these three levels of excellence during a bowling season: First, to bowl as many 200-game scores as possible. Second, to bowl more 600-set scores than any other bowler in his league, and finally, to earn a final average of at least 170. A bowler who sets goals of this magnitude must concentrate on doing the task well. On the other hand, it is also conceivable to assume that the bowlers mentioned are not only interested in achieving high scores and averages, but are also interested in participating for the satisfaction and social approval to be gained from affiliating with the members of their teams and other league bowlers.

An alert, eavesdropping visitor at Friendly lanes during a scheduled league bowling night could possibly overhear a group of bowlers engaged in a conversation which would convey two distinct attitudes toward bowling participation. "Man, I came to bowl hard tonight, my average dropped two pins from last week," or "Well, ... I'm tired tonight. I just came out to be with the guys and drink a couple of beers; ...there's not much I can do about my average now."

Statement of the Problem

The purpose of this study was to determine which of the two participation motives, task or affiliation, interacts with success and satisfaction of selected adult male bowlers who were registered in the GGBA during the 1973-1974 bowling season.

Hypotheses

The investigator's personal involvement and close scrutiny, rather than published research, have inspired the proposal of a general hypothesis that high task and high affiliation motivated adult male bowlers are more successful and satisfied than low task and low affiliation motivated bowlers. The specific hypotheses tested were:

1. High task-motivated adult male bowlers are more successful than low task-motivated adult male bowlers.
2. High task-motivated adult male bowlers are more satisfied than low task-motivated adult male bowlers.
3. High affiliation-motivated adult male bowlers are more successful than low affiliation-motivated adult male bowlers.
4. High affiliation-motivated adult male bowlers are more satisfied than low affiliation-motivated adult male bowlers.
5. Adult male bowlers high in task and affiliation motivation are more successful than adult male bowlers low in both motives or high in one and low in the other.
6. Adult male bowlers high in task and affiliation motivation are more satisfied than adult male bowlers low in both motives or high in one and low in the other.
7. Adult male bowlers who are high task motivated-low affiliation motivated are more successful than low task motivated-high affiliation motivated adult male bowlers.
8. Adult male bowlers who are high task motivated-low affiliation motivated are more satisfied than low task motivated-high affiliation motivated adult male bowlers.

Definition of Terms

Achievement motivation--A competition with a standard of excellence (McClelland, Atkinson, Clarke & Lowell, 1953, p. 111).

Affiliation motivation--A desire which causes an individual to be attracted to a group from which he hopes to gain social approval.

Age--The chronologic age of the subjects used in this study. No attempt was made to verify the ages specified by the subjects.

American Bowling Congress (ABC)--The national organization which adopts and enforces uniform laws, rules, regulations, qualifications, conditions and methods of playing the game of American Tenpins and conducts an annual ABC Championship Tournament (Constitution, Specifications and Rules, 1974-1975, p. 14).

Booster--A term used to designate one of the three divisions of the National ABC Tournament. Specifically, a five-man bowling team having a team average of 850 or less.

Century League--A group of fourteen adult male bowling teams sanctioned by the ABC and registered with the GGBA.

Education--The highest level of education achieved by each subject ranging between the categories of "less than high school" and "advanced degrees," and including technical institutes and/or junior and community colleges.

Final average--The average achieved by each bowler at the end of the 1973-1974 season based on the number of games bowled ranging between 21 and 105 games.

Guaranteed League--A league which requires the payment of all bowling fees for five men each scheduled bowling session.

Greater Greensboro Bowling Association (GGBA)--The ABC-approved local bowling association composed of teams and individuals of the male sex who participate in one or more sanctioned leagues within a twenty mile radius of the corporate limits of Greensboro, North Carolina (Constitution, Specifications and Rules, 1974-1975, p. 14).

Less successful--A final average which is lower than the mean bowling average of either high task-motivated or low task motivated bowlers.

Metro 850 League--A group of fourteen adult five-man bowling teams sanctioned by the ABC and registered with the GGBA.

More successful--A final bowling average which is equal to or higher than the mean bowling average of high task motivated bowlers.

Motivation--A state of "being aroused" to action (Lawther, 1968).

Occupation--The skill and power individuals possess as they perform their daily personal maintenance functions.

Participation Motivation--The motives which cause people to participate in a group; e.g., task motivation and affiliation motivation.

Sanction--A status achieved by paying a registration fee to the ABC.

Satisfaction--The sensation of gratification which accompanies the achievement of a difficult task.

Set--A series of three consecutive games.

Skilled bowler--A bowler who has mastered the bowling skills, techniques and strategies.

Success--A measure determined by the final bowling average of the subjects.

Scope of the Study

The main focus of this study was to investigate task motivation and affiliation motivation and the success and satisfaction of adult male bowlers who were registered with the Greater Greensboro Bowling Association during the 1973-1974 bowling season.

The study included one hundred and six subjects who were members of the Metro 850 and Century Leagues. There were twenty-three all-male bowling leagues registered with the GGBA, representing a total of eight hundred and thirteen adult male bowlers.

The measurement of task motivation, affiliation motivation and satisfaction was accomplished by a self report questionnaire which was executed by each bowler in the privacy of his home. The independent variable of success was determined by the final average of the bowlers.

Significance of the Study

The present study attempted to add further information to the existing theories regarding motivation for participation in competitive sports, especially from the non-physical point of view.

As a result of the current investigation, it is assumed that other investigators will utilize the information to conduct more in-depth studies on bowling participation motivation.

Assumptions

Because of the nature of the study, certain appropriate assumptions were made for this investigation.

1. All of the subjects bowled in the same establishment, using the same lanes during the thirty-five week season. Therefore, it can be assumed that the lane conditions were identical for all bowlers.

2. Each subject completed the relevant questionnaires in the privacy of his home. Therefore, it can be assumed that none of the bowlers' responses was influenced by the other members of his team.

3. Most competitive bowlers are generally highly motivated individuals. Therefore, it can be assumed that the group of bowlers was homogeneous.

4. The sample utilized in this study was relatively small. Therefore, it can be assumed that generalizations emanating from this study may or may not be applicable to all adult male bowlers registered with the GGBA.

5. Marten's modified Competition and Relations Questionnaire can be accepted at face validity.

CHAPTER II

REVIEW OF LITERATURE

The literature associated with achievement motivation is extensive. Research on motivation appears to be in a state of uncertainty because of disagreement among the experts in the field. A negative note on the status of research on motivation was struck by Ward (1967, p. 307) when he stated, "To my knowledge, no worthwhile scientific study of motivation has ever been accomplished or even attempted." Singer (1970, p. 173) was more optimistic about the status of research on motivation but also expressed some doubt when he stated, "A good amount of research has been initiated involving motivation, but strong disagreement exists among theoreticians as to the nature and scope of motivation." Regardless of the disagreement among the theoreticians, psychological and sociological research on athletes and participation from a non-physical aspect has grown rapidly in the United States.

Competition reflects human motives for participation in sport, thus the psychological driving forces which support the need to compete in sports are probably unique for each participant (Ogilvie, 1964).

Early Theories of Motivation

A study by Sargeant & Williamson (1966) indicated that motivation is generally concerned with causation; motives are in a sense causes. One implication of this theory may be closely associated with why one drinks water, why people marry, why we participate in competitive sports, why people lock the doors of their homes at night, why people work hard

to enhance their personal values and worth, and finally, why people seek self-fulfillment. The reader can readily associate these statements with Maslow's (1970) theories of the basic needs of man.

The study of motives and motivation has for many years been hindered by difficulties and problems because it is primarily concerned with the "whys" rather than the "hows" or "whats" of human behavior. Motives cannot be observed because they are always related to behavior.

Mower (1952) indicated that the history of the theories of motivation is very sparse. During the era of Aristotle and other philosophers, motivation was described in terms of "desires" or "drives" which were very closely related to one of the mental forces or abilities on par with others such as perception, imagination and feeling. Studies by Madsen (1961), Sargeant & Williamson (1966) and Murray (1964) reveal that during the Middle Ages Thomas and other philosophers distinguished between "sensual desire" and "rational will." After this period, Descartes, Hobbes and Spinoza considered "drives" (desire or striving) to be still an important class of psychological variables on par with affective and intellectual processes. Studies cited by Madsen (1961); Sargeant & Williamson (1966); Murray (1964, p. 5) reveal that historically, motivation has been considered a problem of reward and punishment. Hedonism, a theory of motivation which was used very frequently during the 18th and 19th Centuries, taught that man always acts to achieve pleasure and avoid displeasure or pain.

Murray (1964) has shown that Hedonistic theories have been rejected by psychologists who feel that man does not know about another person's inner sensation of pleasure and that Hedonism loses all predictive power.

Madsen (1961) recognized that Kant was the first to put "cognition," "emotion" and "will" on the same level in psychological classification, and this triple-level concept dominated psychology until the beginning of this century. It is interesting to note that this tripartition was later reduced to two variables which we refer to as "emotion" and "will." Madsen (1961) recognized W. Wundt as the real founder of experimental psychology and the one who recognized the close relationship between "emotion" and "will." He relied on the term "will" to express his theory of motivation which is defined as a special series of emotions which ends with the feeling of determination spontaneously resulting in action.

Near the end of the nineteenth century, Darwin's theory of evolution influenced psychologists to regard "instincts" as the primary motives of behavior in both man and animals, but later, W. James maintained that man was the only creature on earth who had instincts and that these instincts are basic in relation to will. Murray (1964) indicated that as the nineteenth century came to an end, need achievement made an experimental examination of some of the motivational variables, the so-called "determining tendencies," which inspired Lewin to develop his field theory psychology. Coincidentally, about the same time, Freud developed his theories of psycho-analysis which maintained that innate, primitive motives were of

basic importance in the study of the behavior of the individual. Psycho-analysis appears to be germane to several of the theories mentioned previously. Many of the theories of motivation constructed in the early part of the twentieth century included variables of "instincts," "drive" and "need."

Achievement Motivation

Sargeant & Williamson (1966, p. 197) stated, "Emphasis needs to be placed on achievement because of the volume of research concerned with this motive." Much of this research has been done by McClelland and his colleagues (1953). This research has been focused primarily on three broad areas: (1) to test the various kinds of methodologies in the study of the motive, (2) to determine its psychological variables and its relationships to other social motives; and (3) to obtain cross-cultural comparisons.

McClelland et. al., (1953) theorized that the common assumption of most theories was that motives were deficit tensional states which energized the organism until equilibrium is restored. Motives are viewed as surface modes of reaction with two basic objectives--to approach and maintain pleasure and to avoid or reduce pain. All motives are learned, i.e., a motive is the result of organism's affective reaction to a stimulus. Consistent with this line of reasoning, one can accept a logical assumption that achievement motivation is determined by environment.

Several psychologists have defined achievement motivation and it is obvious that they agree on one basic concept of the nature of

achievement motivation. From their basic research efforts McClelland, et. al., (1953, p. 111), defined the achievement motive as, "A competition with a standard of excellence." Heckhausen (1967, pp. 4-5) expanded on McClelland's concept 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. Another psychologist, Atkinson (1964, p. 240) stated, "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 consequences of his actions will be either success or failure. In a more recent study, Weinstein (1969, p. 154) concluded that achievement is generally accompanied by pride in accomplishment; failure by humiliation.

A statement of the theory of achievement motivation, as cited by Weinstein (1969, p. 154), presents some mathematical relationships for predicting an individual's tendency to approach or to avoid achievement-related activity. He states that, "A person's tendency to approach or to avoid achievement-oriented activity is thought to be determined by the interaction of parallel constructs: (1) a relatively stable disposition or motive to achieve success (M_s) or to avoid failure (M_{af}); (2) a subjective probability of success (P_s) or failure (P_f) in which $P_f=1-P_s$; and (3) the attractiveness or incentive value of success (I_s) or negative incentive value of failure ($-I_f$)." The theory holds that the product of the three success variables ($M_s \times P_s \times I_s$) is indicative of a tendency to approach success, while the product of the three failure

variables ($P_f \times M_{af} \times -I_f$) is seen as a tendency to avoid failure. A resultant motivation score (T_a) is obtained by subtracting the avoidance tendency from the approach tendency. A positive score indicates success orientation; a negative score, avoidance or failure orientation.

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.. Studies by Atkinson & Feather (1966) and Atkinson (1964) indicate that achievement motivation can be viewed as the resolution of the conflict between two opposing tendencies.

Need Achievement and Performance

In an early study by Murray (1938), need achievement was purported to describe actions which expressed desire for accomplishment and prestige, ambition, the need to overcome obstacles, to exercise power, and strive to do something difficult as well and as quickly as possible. It was Murray's contention that need-achievement was based on interest or an individual's desire for intellectual distinction.

In a study of motivational determinants of risk taking behavior, Atkinson (1966, p. 5) concluded that 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 supposedly affects actions which produce pride of accomplishment.

Atkinson (1964) reveals that the theory of achievement motivation is, in essence, a theory of achievement oriented performance. Atkinson & Feather (1966) believe that the achievement motive is a psychogenic need or motive which is a stable but latent attribute to personality. Important also is the evidence which suggests gross individual differences in frequency of achievement related responses.

A very important and significant observation seems to clarify the central concept of the achievement motive. It is the feeling of Atkinson & Feather (1966) that the achievement oriented person is generally attracted to activities which require the successful exercise of skill among activities that pit his skill against some standard or the skill of others. He is more challenged by the task of intermediate difficulty, the 50-50 risk, than easier and safer ventures or much more difficult and speculative ones. If he is successful, he will raise his sights. If he is unsuccessful, he will lower them accordingly. He is realistic when he takes such a position. The implication is apparent. The study previously cited (Atkinson & Feather, 1966) reveals that in the constrained performance situation, a person should work hardest when the probability of success is .50 because motivation to achieve and motivation to avoid failure will summate in the constrained act which is at the same time the pathway toward success and away from failure. It is assumed that this summation would occur in the cases where one motive is stronger.

A study by Feather (1963) on persistence at a difficult task was concerned with a situation in which an individual works at an achievement

task presented to him as very difficult, when he knows that he can turn, whenever he chooses, to another task of the same type which has a 50/50 probability of success. The initial achievement task is, in fact, objectively insoluble and the person undergoes repeated failure in his attempts to get the solution. Persistence was studied in relation to the relative strength within the individual of the motives to achieve success and to avoid failure.

A study by McClelland & Liberman (1949), involving thirty-six male undergraduates, on whom a performance measure of need achievement was available, were asked to try to recognize 30 tachistoscopically presented words. They were given successive .01 second exposures of the words at increasing illuminations until they were able to identify them correctly. Ten of the words were neutral, 10 security-related, and 10 achievement related. The major findings of this study were that the subjects who possessed high need-achievement, as determined either by the apperceptive or performance measure, recognized the achievement-related words with positive (success) connotations (+ words) more quickly than did the subjects with low need-achievement. There were no differences for the achievement-related words connoting failure or difficulty (- words).

These results are interpreted as meaning that the group of subjects with moderate need-achievement are security minded and chiefly concerned with avoiding failure, or with achieving a minimal level of aspiration, whereas, the group of subjects with high need-achievement are concerned more directly with achieving success or attaining a

maximum level of aspiration. The data of this study support the hypothesis that an increase in achievement motivation leads first to concern to avoid failure and then, as motivation gets more intense, to a greater concentration on success. The results of a study which emphasized a cognitive explanation of achievement-related behavior, suggested that high and low achievers diverge behaviorally in the achievement situation because they conceptualize the causes of success and failure in different ways.

In an early study by Atkinson (1953) on the achievement motive and the recall of interrupted task, an experiment was performed with male college students under three different experimental instructions presumed to vary the probability that subjects would perceive completion as evidence of personal accomplishment (success) and incompleteness as failure. When instructions clearly signified that completion meant success and incompleteness meant failure, subjects high in need-achievement recalled more incompleteness than subjects low in need-achievement. Recall of incompleteness increased for subjects high in need-achievement as instructions increased the probability that completion and incompleteness would be perceived as success and failure. The opposite trend occurred for subjects low in need-achievement. The results of this study are consistent with a hypothesis advanced by McClelland and Liberman (1949), that need-achievement is essentially positive motivation to experience feelings of accomplishment and success and that lower need-achievement scores imply relatively greater anxiety about failure.

Studies by Atkinson & Litwin (1960) show need-achievement to be a motive that generally enhances performance in achievement situations while studies of test anxiety show it to be a motive that normally produces decrements in achievement test performance. Interpretations of the results of some studies that have employed only a measure of need-achievement (Atkinson, 1953) have often included some reference to subjects having low need-achievement scores as apparently more fearful of failure. On the other hand, studies that have employed only the measure of test anxiety (Mandler & Sarason, 1952) have viewed the behavior of subjects having low test anxiety scores as less conflicted and more task oriented. The interpretations, as stated by Atkinson and Litwin, were duplicated in a study by Feather (1965) which indicated that subjects classified as high in need-achievement and low in test anxiety persist longer at an achievement task when it is presented to them as easy than as very difficult. In contrast, subjects classified as low in need achievement and high in test anxiety do just the reverse. Atkinson & Litwin (1960, p. 54) state, "Groups classified as high need achievement-low test anxiety should be more strongly motivated to approach success than to avoid failure. The low need achievement-high test anxiety group, on the other hand, should be more strongly motivated to avoid failure than any other group." Two important assumptions evolved from the study previously cited (Atkinson & Litwin, 1960). They state that need achievement is a positive disposition to approach success and that test anxiety is a disposition to avoid failure.

Affiliation as it Applies to Small Groups

Within the realm of the athletic world, affiliation appears to be a very strong and necessary motive. Walt Whitman once wrote, (Schacter, 1959, p. 1) "I ... demand the most copious and close companionship of men." This bit of sentiment is familiar, for most of us have experienced occasional cravings to be with people, sometimes for good reason, frequently for no apparent reason: We seem simply to want to be in the physical presence of others.

People who participate in sports, whether they do so for the glory of winning in a competitive confrontation with others, or simply being associated with an organized group, very often express satisfaction in belonging to a closely knit group such as a basketball or bowling team. Man has developed a tolerance for association with selected groups. He is born into a very closely knit family unit, continues to associate with the family unit while seeking identification with other groups, and finally leaves the family group to begin his association with groups of his own selection.

In his book, The Psychology of Affiliation, Schacter, (1959, p. 1) makes reference to what he calls the "common sense" line of thought of why people must associate with others. He developed two propositions which seem to be appropriate to this study. First, he proposes that people mediate goals for one another, and it may be necessary to associate with other people or belong to particular groups in order to obtain specifiable individual goals. For example, to hold a job, it may be necessary to join a union; to play bridge, it may be

necessary to become a member of a bridge club; to bowl competitively, it may be necessary to become a member of a team associated with a bowling league. A number of studies (Gilchrist, 1952 & Thibaut, 1950) have demonstrated that the attractiveness of the group or of specific individuals will vary with their promised or proven success in facilitating goal attainment. Secondly, people in and of themselves represent goals for one another; that is, people do have needs which can be satisfied only in interpersonal relations. Approval, support, friendship, prestige and the like have been offered as examples of such needs. There is little doubt that such needs are particularly powerful ones and that association with other people is a necessity for most of us.

In his book, Principles and Methods of Social Psychology, Hollander (1967, p. 383) states, "The motivation to participate in a group consists of two distinct clusters of motives." He refers to these two clusters as task-motivation and affiliation-motivation. High task motivation is characterized by an individual who is primarily interested in joining others for the purpose of achieving a mutual goal. Of secondary importance to a high task-motivated individual is his relationship with other members of the group. Important to the investigator's study is Hollander's concept of the affiliation motive. High affiliation motivation is characterized by an individual who is primarily attracted to the group as a source of social approval.

In a recent study, (Firestone, Kaplan and Russell, 1973), the classic findings of Schacter (1959) were supported ... greater affiliation by fearful subjects with similarly fearful others than with dissimilarly nonfearful others. Also supported is the 1961 finding by Sarnoff and Zimbardo of greater affiliation of fearful subjects than anxious subjects with regard to others of the same state. Anxious subjects affiliated more with dissimilar, nonanxious others than with similar anxious others.

Schacter (1959, p. 103) summarized the major findings of studies on affiliation. He found that: (1) Affiliative tendency is positively related to the states of anxiety and hunger, (2) The relationship between anxiety and the affiliative tendency is independent of the opportunity to communicate, for it remains positive in a variety of conditions ranging from complete communication to absolutely no verbal communication, (3) The affiliative tendency is highly directional. Anxious subjects want to be only with those in a similar plight, (4) There are individual differences in the propensity to affiliate under conditions of anxiety.

Festinger, Pepitone & Newcomb (1952), p. 135) suggested that there are two classes of needs which group membership satisfies--needs such as approval, status, and help, which require singling the individual out and necessarily involve high social and individual identifiability; and needs whose satisfaction requires being "submerged in the group," a condition labeled "de-individuation" and described as a state of personal anonymity in which the individual does not feel singled out or identifiable.

Festinger (1954, p. 117) presents an entirely different set of needs that may be satisfiable only by association with other people.

In his theoretical paper on social comparison processes, he writes:

The drive for self evaluation concerning one's opinions and abilities has implications not only for the behavior of persons in groups but also for the process of formation of groups and changing membership of groups to the extent that self evaluation can only be accomplished by means of comparison with other persons, the drive for self evaluation is force acting on persons to belong to groups to associate with others. The subjective feelings of correctness in one's opinion and the subjective evaluation of adequacy of one's performance on important abilities are some of the satisfactions that persons attain in the course of these associations with other people. How strong the drives and satisfactions stemming from the sources are compared to the other needs which people satisfy in groups is impossible to say, but it seems clear that the drive for self evaluation is an important factor contributing to making the human being "gregarious."

People who seek association with small, select groups anticipate being fully accepted as members; however, there exists a general fear of being rejected for one reason or another. A study by Shipley & Veroff (1952) measured the fear of rejection aspect of need affiliation. One would expect that a subject who had a high need affiliation score should be unpopular. In line with this deduction, a subject who has been rejected by his group or considered unpopular should have a high need affiliation score.

Youngleson (1973) supports the theory of fear of rejection in a study of twenty-four 15-17 year olds raised in children's homes and twenty-four non-institutionalized matched controls to test the hypothesis

that institutionalized subjects would have greater need to affiliate and manifest less self esteem than controls. Results support the hypothesis. It was concluded that social deprivation of institution reared children leads through a fear of rejection to an increase in affiliation motivation, and because of a poor socializing environment, to reduced self esteem.

Success and Satisfaction

Cooper and Payne(1967) reported the only study concerned with the relationship between task motivation and success. They found that among English football teams a significant correlation of .72 existed between high task motivated coaches and trainers, and team success. They also reported that no significant relationship was found between success and high task motivated players.

Martens & Peterson (1971) found that there is a circular relationship between satisfaction, cohesiveness, and success. Teams which are successful have greater satisfaction from participation than unsuccessful teams. Greater satisfaction, in turn, leads to higher levels of cohesiveness. Carlson (1969) reported that satisfaction is a function of ability and motivation and that there were high correlations between ability and performance for individuals high in motivation. Thus, the level of motivation seemed to affect the relationship between ability and performance.

Success in sports activities is closely related to how well team members affiliate. Coaches often refer to this dimension as "cohesiveness" or "togetherness." It is generally accepted that teams

which are highly cohesive are more successful. However, Fiedler (1954) and McGrath (1962) reported that a high degree of cohesiveness interfered with effective performance of basketball teams and rifle teams respectively. The authors in explaining these results suggested that players on highly cohesive teams may be more concerned with maintaining good interpersonal relations than with effectively playing basketball.

A study by McGrath (1962) alludes to the basic assumption that secure and anxiety free interpersonal relations will not only aid an individual's adjustment but will also help him to perform with increased efficiency. There is some reason to question the assumption that positive interpersonal relations will be necessarily conducive to task efficiency. Fiedler and his co-workers (1958) have shown that psychologically close interpersonal relations between leader and follower in task groups may be detrimental to team performance.

A review of small group research studies by McGrath and his associates (1962, p. 366) lent further support to the argument that good interpersonal relations within work groups do not necessarily lead to increased individual task effectiveness.

Thibaut (1950, p. 251) feels that a certain minimum of cohesiveness or integrating force, is necessary for a group to exist at all. Unless a certain critical strength of force toward remaining in the group applies to all members of the group, the group will disrupt and cease to be. The most plausible basic assumption seems to be that there is a close association between the attractiveness of the activities of a group and attractiveness of membership in that

group. From this basic assumption, we should expect a consistently high status team to become more cohesive. Actually, only the first derivation holds; the unsuccessful low-status teams show slightly greater increase in cohesiveness than do control teams. From the data of this study, it is not possible to determine whether increased cohesiveness represents increased attractiveness of own-group members, decreased attractiveness of opposing team members, or both.

Summary

The literature associated with achievement motivation is extensive and research on motivation appears to be in a state of uncertainty because of disagreement among experts in the field; however, interest in psychological research on athletes and performance from a non-physical aspect has grown rapidly in the United States.

A review of literature focused on early theories of motivation revealed that motivation is basically concerned with causation and that motives cannot be observed because they are always related to behavior. Historically, motivation has been considered a problem of reward and punishment. Hedonism, a theory of motivation during the eighteenth and nineteenth centuries, taught that man always acts to achieve pleasure and avoid displeasure or pain. Hedonism was rejected by psychologists who felt that man does not know about another person's inner sensation and that Hedonism loses all predictive power. Darwin's Theory of Evolution regarded "instincts" as the primary motive of behavior in both man and animals, but later it was determined that man was the only creature on earth who had instincts and that these instincts are basic in relation to will.

McClelland et. al., (1953) theorized that motives were deficit tensional states which energized the organism until equilibrium is restored. All motives are learned. A motive is the result of an organism's affective reaction to a stimulus. Thus, achievement motivation is determined by environment. McClelland defined achievement motivation as "A competition with a standard of excellence."

Heckhausen (1967) describes 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.

Atkinson (1964) feels that achievement motivation 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 consequences of his actions will be either success or failure.

Need achievement was purported to describe actions which expressed desire for accomplishment, prestige, ambition, the need to overcome obstacles, to exercise power, and strive to do something difficult and as well and as quickly as possible. 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 explicit knowledge of results. The achievement motive is a psychogenic need or motive which is a stable but latent attribute of personality.

The achievement oriented person is generally attracted to activities which require the successful exercise of skill among activities that pit his skill against some standard or skill of others. He is more challenged by the task of intermediate difficulty, the 50-50

risk, than easier and safer ventures or much more speculative ones. If he is successful, he will raise his sights. If he is unsuccessful, he will lower them accordingly.

Affiliation motivation is based on the fact that people crave to be with people, sometimes for good reason, frequently for no apparent reason. They simply want to be in the physical presence of others. People mediate goals for one another, and it may be necessary to associate with other people or belong to particular groups in order to obtain specifiable individual goals. The motivation to participate in a group consists of two distinct clusters of motives--task motivation and affiliation motivation.

There was a significant correlation between high task motivated coaches and trainers and team success among English football teams, but there was no relationship between success and high task motivated players.

It was found that there is a circular relationship between satisfaction, cohesiveness and success; however, it was reported that a high degree of cohesiveness interfered with effective performance of basketball teams and rifle teams.

CHAPTER III

PROCEDURES

The procedures of this study are reported in four sections:

(1) Selection of Subjects; (2) Sources of Data; (3) Method of Data Collection and (4) Statistical Design.

Selection of Subjects

Permission was obtained from the presidents of the Metro 850 and Century Leagues, affiliated with the Greater Greensboro Bowling Association, to solicit the members to serve as subjects in this study.

The investigator was seeking subjects who possessed high levels of bowling skill as well as experience in competitive bowling. The Metro 850 League had been in existence since 1961, and the Century League was organized in 1963. The continuity and longevity of these two leagues provided a basis for deciding that the members of both leagues were skilled bowlers. Many of the bowlers were original members of their teams.

The two leagues were the largest in the GGBA, each consisting of fourteen teams. All of the subjects were male. None of them was younger than twenty-one years of age nor older than seventy-seven. All of them had paid a required sanction fee and were registered with the ABC and the GGBA.

There were twenty-three all-male bowling leagues, consisting of eight hundred thirteen bowlers, registered with the GGBA during the 1973-1974 season (Appendix A). The Metro 850 League and the Century

Leagues combined, consisted of one hundred and fifteen bowlers, or 14% of the bowlers registered in the twenty-three all-male leagues. One hundred and six, or 92%, of the bowlers in the two leagues participated in the study.

Both leagues bowled once a week during the thirty-five week season (Appendix A). Each league was a guaranteed league meaning that each team captain was required to pay the entire cost of the bowling fee and prize fund for his team regardless of the number of absentees. This rule obligated each bowler to participate on a regular basis. The maximum number of games which could have been bowled by any bowler was one hundred and five. No subject was included in this study who had not bowled at least twenty-one games. The ABC has set twenty-one games as a minimum standard for establishing an average for participation in ABC-sanctioned tournaments.

The Century League bowled on Tuesdays at 9:00 P.M., and the Metro 850 League was scheduled for Wednesdays at 7:15 P. M. Both leagues bowled in the Brunswick Friendly Lanes in Greensboro, North Carolina, and were assigned to bowl on Lanes 1-14 and 27-40 respectively during the season. Therefore, it could be assumed that the bowling environment, including lane conditions, lighting and noise levels, was identical for all bowlers.

Both leagues gave trophies to each member of the championship teams at the end of the season. Both leagues awarded cash prizes to all teams, based on the position that each team held in the final

standings. In addition, each team could add a substantial amount of money to its winnings at a rate of \$2.25 per point. A team could earn four points each night that it bowled--one point for each game won in a three-game set and one point for earning the highest number of total pins for the set.

Sources of Data

Demographic Data

A demographic data questionnaire (Appendix B) was developed for use in collecting a minimum of personal information on the age, education and occupation of each bowler. This information was used to more precisely define the nature of the population being studied.

The questionnaire also included a bowling inventory which solicited information on two aspects of bowling participation: (1) personal characteristics and mechanics of the bowler; and (2) the levels of skill achieved in bowling (Appendix B).

Task Motivation, Affiliation Motivation and Satisfaction

Marten's (1970) Competition and Participation Relations Questionnaire (Appendix B) was chosen over other questionnaires which purport to measure task motivation, affiliation motivation and satisfaction for several reasons. First, Marten's questionnaire is a modified version of the more general Orientation Inventory which was developed by Bernard M. Bass (1962). The test-retest reliabilities for the three scales of the inventory were: Self-Orientation .77; Interaction-Orientation .76; and Task-Orientation .75. Second, Marten's modified version of the Orientation Inventory included an excellent quantitative scale which could be used to assess each individual's

orientation toward bowling participation as being motivated by a desire to do the task (task motivation), or to be with others (affiliation motivation). The questionnaire was constructed similar to a semantic differential scale with a nine-choice alternative between two polarities. It was believed that the subjects involved in this study would appreciate the simplicity of the measuring instrument. Finally, the questionnaire could be scored objectively and efficiently in less than ten seconds. It also provided a source for dichotomizing the three variables into high or low categories. Bass (1962) indicated that his Inventory was best suited for research in social interrelationships. Bass (1967) presents an excellent discussion of the Orientation Inventory.

Achievement Motivation

Lynn's (1969) Achievement Motivation Questionnaire (see Appendix B) was selected for use in collecting data for this study because it was a short, objective measure of achievement motivation which avoids many of the problems inherent in projective tests.

Recognized high achievers score highly on the Lynn scale. McClelland (1961) views entrepreneurship as the most favored way of life of the high achiever and as a criterion group in Lynn's study, entrepreneurs scored highest of all. Validation of the questionnaire consisted of using three criterion groups of forty entrepreneurs, twenty-eight university professors and a group of managers. Norms consisted of scores made by male university students. All criterion groups scored higher

than the students and entrepreneurs scored highest with professors and senior managers scoring high in that order.

Healey & Landers (1973) used Lynn's Achievement Motivation Questionnaire in a study which tested Atkinson's theory of achievement motivation on a stabilometer task of either low, moderate or high task difficulty. Scores achieved on the L.A.Q. were used to separate one hundred twenty high school males into two groups of high and low achievers. The main effects of Need Achievement were all nonsignificant in this study.

Lynn's Achievement Motivation Questionnaire appeared to be an excellent instrument to use in collecting data for the present study. It consisted of eight short questions which could be answered by circling a "yes" or "no" response. The questionnaire was relatively easy to score. One point was awarded for each "yes" response to Questions 2,3,7,8, and one point for each "no" response to Questions 1,4,5,6. Thus, a single score ranging between 0 and 8 could be assigned to each subject. A score of 8 would represent the highest score and zero the lowest. Based on scores achieved on the questionnaire, subjects could be categorized as either high achievers or as low achievers.

Success

The measure of success was the final bowling average of each bowler. The final averages of the bowlers were published in the First Annual Metro 850 Yearbook, (1973-1974) and the Century League's final league standing sheet. All final averages appear on the Raw Data Sheets (see Appendix D).

Method of Data Collection

The data for this study were collected during the months of April and May, 1974. The bowling season for the two leagues involved in this study ended on May 7, 8, 1974. Several factors influenced the decision to use the U. S. Postal Service for collecting data. First, and probably more important than any other factor, was the impossibility of assembling the subjects for a group meeting, either before or after one of the regularly scheduled bowling sessions. With the exception of one, all of the bowlers were working men. Some of them came straight from their jobs to the bowling lanes, and, conversely, some would leave for work as soon as they finished bowling. Second, the bowling establishment was not equipped for seventy-four persons to be seated comfortably to complete questionnaires. Third, the investigator did not want the subjects to be in close proximity while executing the questionnaires because of the potential influence which could be exerted on teammates' answers. Finally, it was anticipated that each subject would answer the questionnaire more honestly in the privacy of his home.

The procedure required the mailing of two sets of materials to each of the one hundred fifteen bowlers initially involved in the study. The first mailing included a letter introducing the idea of the study to each bowler (Appendix B), and a stamped return-addressed postal card (Appendix B) bearing two statements which required a simple check mark to indicate whether or not he would participate in the study. The second mailing included the questionnaire, instructions and a self-addressed, stamped envelope for returning the questionnaire.

Statistical Design

The purpose of this study was to investigate participation motivation and the interaction of success and satisfaction of selected adult male bowlers who were registered with the Greater Greensboro Bowling Association during the 1973-1974 bowling season.

Because of the magnitude of the computations involved, use was made of the computer terminal at the University of North Carolina at Greensboro. The University of North Carolina utilizes the services of the Triangle Universities Computation Center (T.U.C.C.) which uses the IBM 70. The Statistical Analysis System (Service, 1972) Program was used for all computational work.

Data collected from the subjects for the independent variables of task and affiliation motivation were dichotomized at an appropriate point to designate the high and low categories for each variable. The scales used to assess task and affiliation motivation were similar to the semantic differential. The raw scores for task and affiliation motivation were converted to z scores, thus providing a more precise method of determining the groupings of high and low. A contingency table was plotted to divide the subjects into quadrants having as equitable representation as possible.

A correlation matrix was computed to determine if there was a relationship among the three dependent variables of success, satisfaction and achievement motivation. If a lack of relationship were evident, indicating independence, it would then be valid to use the ANOVA.

Three two-way analyses of variances were computed for the purpose of determining differences that existed between individuals grouped as relatively high or low on the classificatory variables of task and affiliation motivation when the dependent variables of success, satisfaction and achievement motivation were considered. All effects found significant at or beyond the .05 probability level were subsequently analyzed by Omega Square which provided a means for assessing the percentage of variance accounted for by experimental classification.

CHAPTER IV
ANALYSIS AND DISCUSSION OF DATA

Description of Subjects

The subjects utilized in this study were members of the Metro 850 and Century Leagues. Both leagues were affiliated with the Greater Greensboro Bowling Association. The presidents of both leagues granted permission to solicit the members to serve as subjects. Relevant questionnaires and instructions were mailed to one hundred and fifteen bowlers. One hundred and six, or 92%, of the questionnaires were completed and returned.

Defining the Population

Demographic data for one hundred and six subjects were analyzed to more precisely define the population. Means, standard deviations and ranges were computed for age, education and occupation classifications. (See Table I.)

The mean age of the population was 40.3 years. Fifty-two of the subjects, or 49% of the population, were younger than forty years of age, and fifty-four subjects, representing 51% of the population, were older than forty. Eight subjects were sixty years of age or older. One bowler had attained the age of seventy-seven at the time the data were collected. Figure 1 illustrates the distribution of the ages among the population.

An analysis of the education background of the male bowlers utilized in this study indicated that the majority of the subjects

TABLE I

Means, Standard Deviations and Ranges for Categories
of Demographic, Bowling Inventory, and
Achievement Motivation Data

(N = 106)

Categories	Mean	S. D.	Range
Age	40.3	11.7	21- 77
Handedness	1.1	.3	1- 2
Type of Approach	3.9	.7	3- 7
Type of Delivery	1.9	1.0	1- 4
Years of Active Bowling	11.7	7.3	1- 41
Beginning Average	167.3 ^a	11.2	133-193
High Game	260.8	17.9	214-300
High Set	645.4 ^b	74.0	0-781
Final Average	166.3	10.1	140-197
Lynn's Scale	5.9	1.2	3- 8
Affiliation Motivation	1.5	.5	1- 2
Task Motivation	1.4	.5	1- 2
Satisfaction	4.7	2.8	1- 9

^aPortions of pin averages are dropped.

^bData lacking for one subject (N = 105)

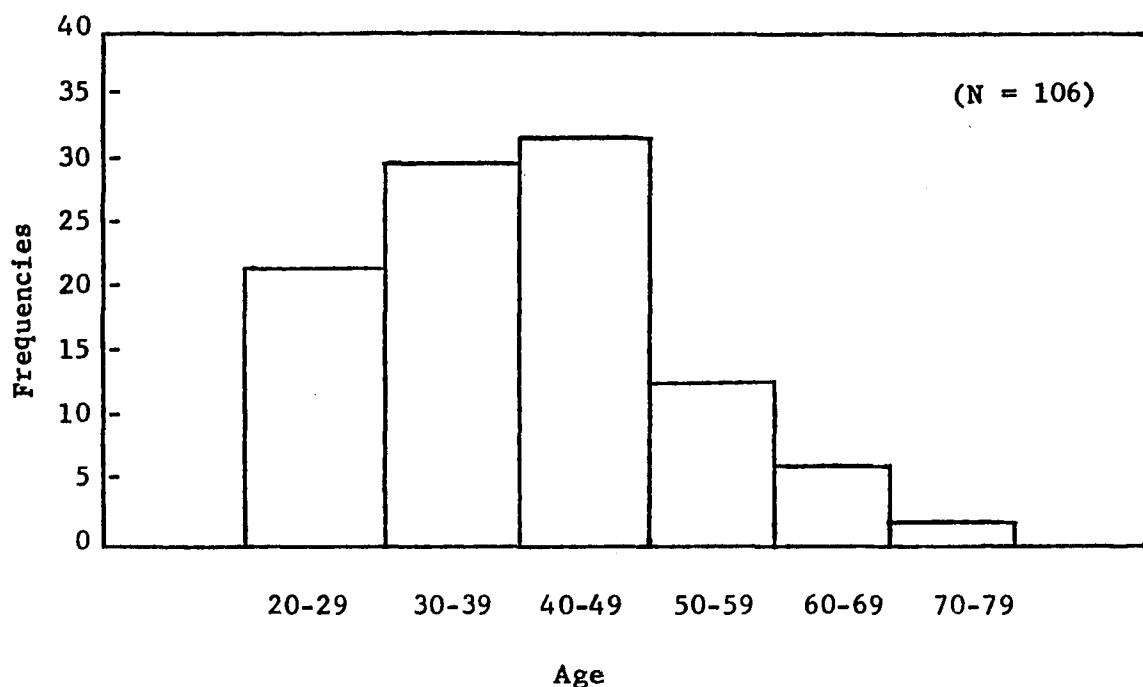


Figure 1
 Distribution of Ages of Selected Adult Male Bowlers
 Registered With the GGBA in 1973-1974

had received high school diplomas or had attended college. The group contained more high school graduates than any other classification. Thirty-four, or 32%, had received the high school diploma. The second largest group was represented by twenty-six subjects who had some college education. Twenty-four percent fell in this classification (see Figure 2).

Thirteen subjects had received the Bachelor's degree while twelve had earned Master's degrees or professional degrees. These groups represented 12% and 11% of the population respectively. The third largest group was represented by those subjects who had achieved less than a high school education. Eighteen, or 17%, fell in this

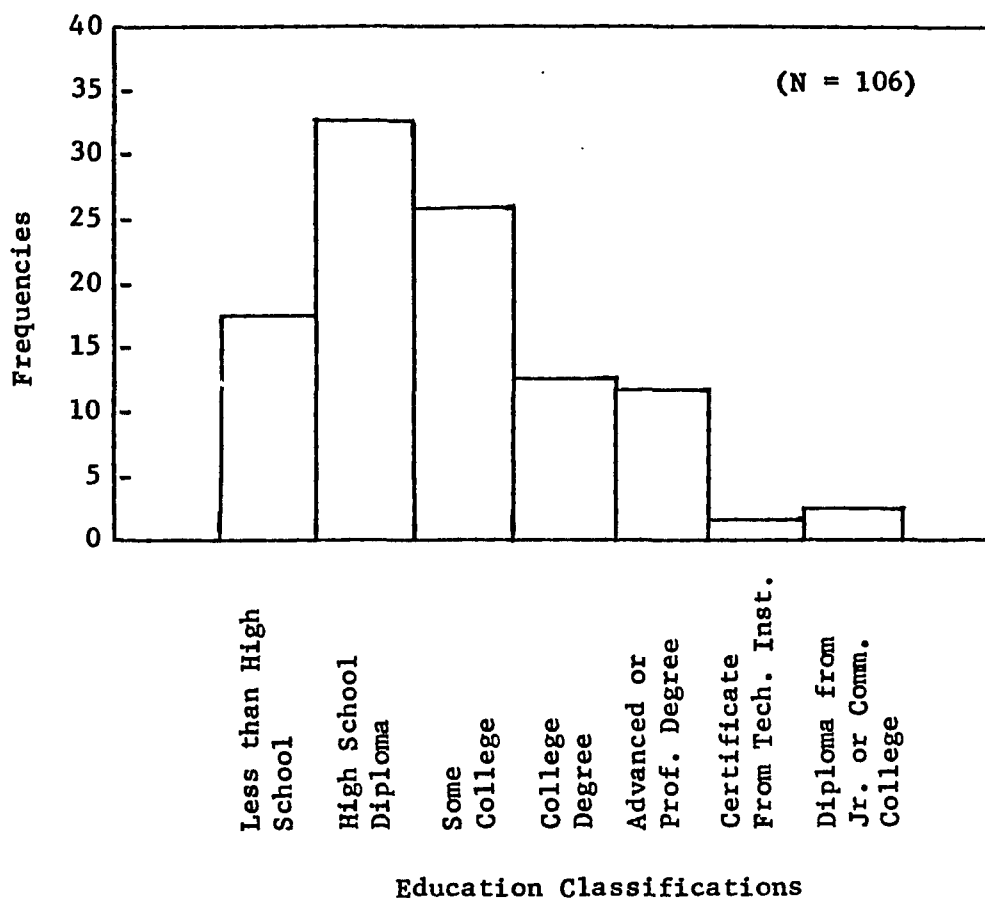


Figure 2

Levels of Education Achieved by Selected Adult Male Bowlers Registered in the GGBA in 1973-1974

classification. One subject had received a certificate from a technical institute, and two had received diplomas from junior or community colleges.

The occupations of the one hundred and six subjects were varied, ranging from positions of high executives or proprietors of large concerns to unskilled employees (see Figure 3).

The occupation scale used in this study was designed by Hollingshead (1957). His scale categorized many types of occupations

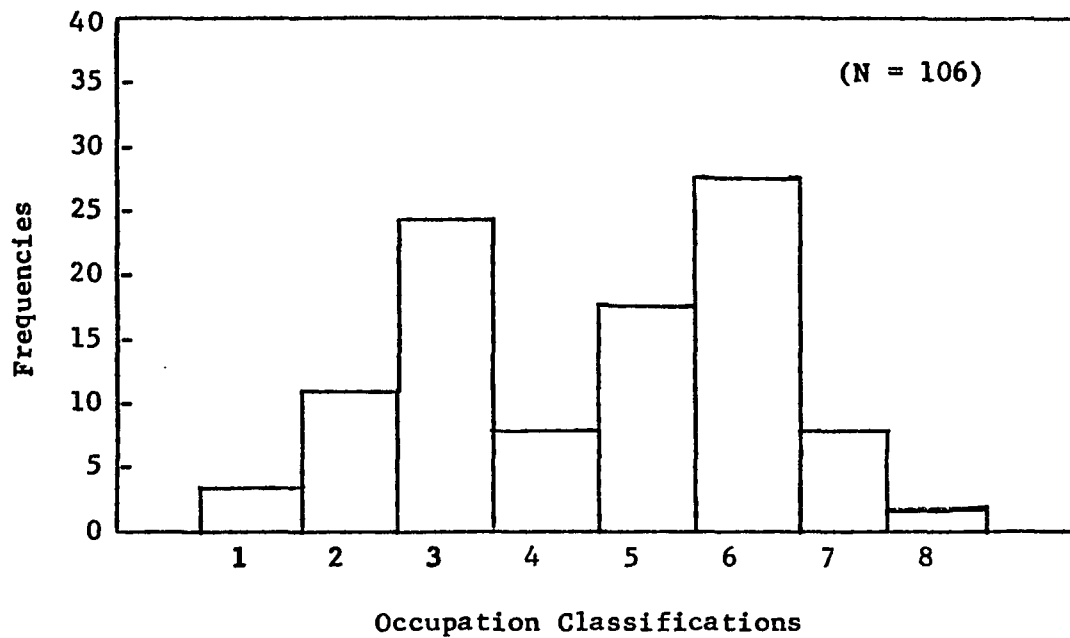


Figure 3

**Distribution of Types of Occupations*Among
Selected Adult Male Bowlers Registered
in the GGBA During the
1973-74 Bowling Season**

***Identification Key For Occupations**

1. Higher Executives, Proprietors of Large Concerns,
and Major Professionals
2. Business Managers, Proprietors of Medium Sized
Businesses and Lesser Professionals
3. Administrative Personnel, Small Independent
Businesses, and Minor Professionals
4. Clerical and Sales Workers, Technicians, and
Owners of Little Businesses
5. Skilled Manual Employees

6. Machine Operators and Semi-Skilled Employees
7. Unskilled Employees
8. Unemployed (No occupation or retired)

into major groupings, each being designated numerically one through eight (See Appendix C).

The data indicated that a greater number of subjects were employed as machine operators or semi-skilled workers than in other occupational classifications. Twenty-nine subjects, or 27%, were employed in this area. The second largest group consisted of persons who worked as administrative personnel, owners of small independent businesses or minor professionals. This group was dominated by managerial personnel. There were twenty-five in this group, representing 24% of the population. The third largest group was that of skilled manual employees such as cabinet makers, butchers, sheetmetal workers, mechanics, truck drivers and postal workers. Eighteen, or 17%, of the population fell in this category.

A fourth group, characterized by business managers of large concerns, proprietors of medium-sized businesses and lesser professionals, was represented by twelve individuals, or 11% of the population. Characteristic occupations in this group were personnel managers, sales managers, production managers, clothing store owners, opticians, social workers, accountants, and elementary and secondary teachers. Nine subjects, or 8%, were classified as clerical and sales workers, technicians and owners of little businesses.

Four subjects were classified as higher executives, proprietors of large concerns, and major professionals. Two were presidents of large concerns, one was a practicing lawyer, and the other one was a comptroller (C.P.A.). This small group represented 3.8% of the population. Seven subjects, or 7.5% of the population were classified as unskilled workers. One subject was retired, thus, he was listed as unemployed.

Bowling Skills of the Subjects

The subjects constituting the population which participated in this study were skilled bowlers. Bowling participation experience of the group ranged between one and forty-one years with the mean number of years being eleven. The means, standard deviations and range were calculated for several categories of bowling scores which are generally accepted as standards for judging the skill of bowlers (see Table I).

Beginning averages of the subjects ranged between 133 and 193. The mean beginning average of the population was 163. Final averages of the bowlers for the 1973-1974 bowling season ranged between 140 and 197. The mean final average was 166. The standard deviation of 10.1 indicated that approximately seventy of the bowlers finished the 1973-1974 season with final averages falling between 156 and 176.

Ninety-six bowlers, or 91% of the population, were right handed. There were no ambidextrous bowlers in either league. Fifty-four percent of the bowlers preferred the four-step approach, 22% used the three-step approach, and 20% relied on the five-step approach. Forty-two bowlers, or 39.6% utilized a curve ball delivery while an equal number and percent preferred the hook-ball delivery. Twenty-two bowlers used a straight or back-up ball delivery.

Achievement Motivation Levels of Adult Male Bowlers

Data collected from the group on Lynn's Achievement Motivation Questionnaire were analyzed to determine the status of the group's disposition to be successful. The mean and standard deviation were computed for the purpose of comparing the disposition of the adult male bowlers to be successful with that of Lynn's criterion groups (see Table II).

TABLE II

Means and Standard Deviations of Scores Obtained
On Lynn's Achievement Motivation Questionnaire
by Adult Male Bowlers and Criterion Groups

Groups	N	Mean	S.D.
Adult Male Bowlers	(106)	5.91	1.21
Entrepreneurs	(40)	6.82	1.58
Professors	(28)	6.54	1.46
Senior Managers	(45)	5.91	1.11
Naval Officers	(80)	4.51	1.40

The distribution of achievement motivation scores obtained by selected adult male bowlers appears in Figure 4.

Lynn's Achievement Motivation Questionnaire consisted of eight questions which could be answered by simply circling a 'yes' or 'no.' Scoring the questionnaire was accomplished by awarding one point for 'yes' answers to Questions 2,3,7,8, and one point for 'no' answers

to Questions 1,4,5,6, (see Appendix B). A final score on the questionnaire could range between 0 and 8 with zero representing the lowest possible score and eight the highest score.

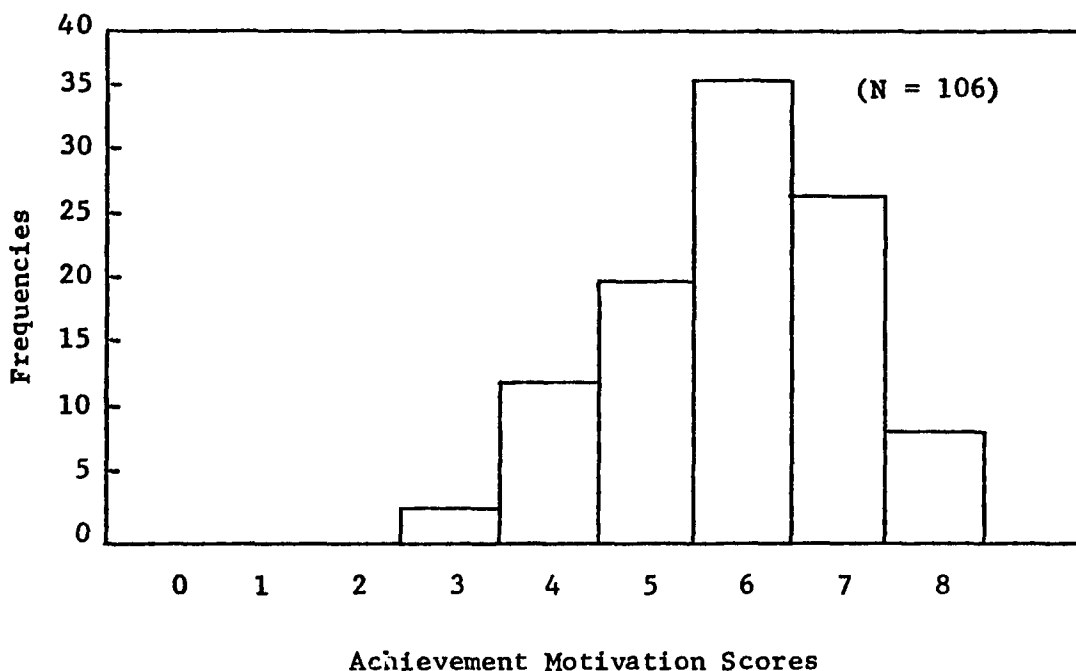


Figure 4

**Distribution of Achievement Motivation Scores Obtained
By Selected Adult Male Bowlers on Lynn's
Achievement Motivation Questionnaire**

Table II reveals that the mean score for the adult male bowlers was 5.91 with a standard deviation of 1.21. These figures are almost identical with those of Lynn's Senior Managers' group, whose mean was also 5.91 and a standard deviation of 1.11. When the differences between the means of the adult male bowlers and the criterion groups were tested by using the "t" formula for large uncorrelated groups, it was found that the "t" values for all groups except the adult male bowlers and the

senior managers were statistically significant at the .05 probability level (see Table III). The implication here is that the adult male bowlers possessed a disposition to be successful which was identical with that of the senior managers.

TABLE III

Test of Significance Between Scores on Lynn's
Achievement Motivation Questionnaire of
Adult Male Bowlers and Lynn's
Criterion Groups

Groups	t
Adult Male Bowlers: Entrepreneurs	3.96*
Adult Male Bowlers: Professors	2.07*
Adult Male Bowlers: Senior Managers	0.00
Adult Male Bowlers: Naval Officers	7.12*

*Significant at .05 Level

Classifying Subjects Into Groups of Relatively High and Low Task and Affiliation Motivation

Prior to performing the analyses of variances, an attempt was made to separate equitably the subjects into high and low task and affiliation motivation groups. However, when a scatter plot of distributions, based on the task and affiliation scales, was run (Figure 5), it was found that the population of subjects was disproportionately represented by having high scores on both of the

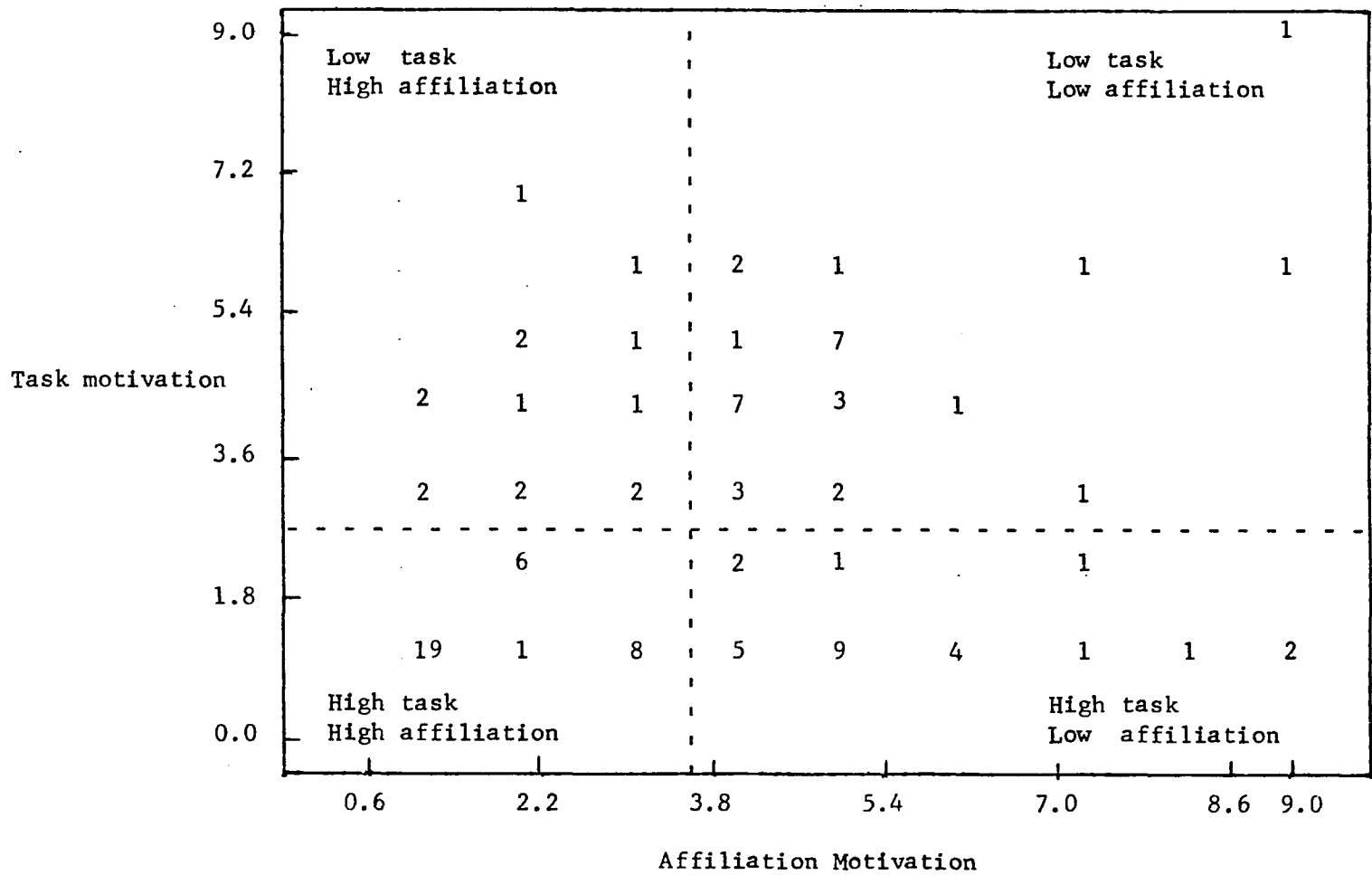


Figure 5

Scatter Plot of Distributions of High and Low Task and Affiliation Motivation

variables. Hence, a decision was made to divide the subjects into quadrants having as equitable representation as possible.

Task and affiliation raw scores were converted to Z scores, thus providing a more precise method of determining the groupings of high and low. If task motivation scores were less than two, they represented the high category. If higher than two, they were considered to be low. Affiliation motivation scores of 3.8 or lower represented the high category and affiliation scores higher than 3.8 were indicative of low relative to high, but they were still high when compared with the dichotomized nine-point scale whose mid-point was 4.5.

Analysis of Variance

These unequal and disproportionate cell representations suggested that the intended analysis of variance procedure would result in the confounding of the factors of task and affiliation motivation (Applebaum & Cramer, 1974). A test of the lack of independence between factors was run using the SAS Regression Procedure, and this resulted in confirmation of confounding. Thus, the analyses of variance computations were performed by coding the classificatory factors of task and affiliation as dummy variables within the SAS Regression Procedure. This resulted in computing sequential sums of squares and interactions which corrected for the confounding effects of all factors entered into the regression equation. The results of these analyses are presented in Tables IV and V.

Results

Task Motivation for the Variables Success and Satisfaction

Success. The summary in Table IV shows the obtained F of 4.31

TABLE IV

Two-Way Analysis of Variance on the Dependent Variable
Success Comparing Task and Affiliation Motivation

Source of Variation	D. F.	Sequential S. S.	M. S.	F
Task Motivation	1	434.14	434.14	4.31*
Affiliation Motivation	1	139.33	139.33	1.38
Interaction	1	2.59	2.59	.02
Error	102	10,254.65		

* $P < .05$

TABLE V

Two-Way Analysis of Variance on the Dependent Variable
Satisfaction Comparing Task and Affiliation Motivation

Source of Variation	D. F.	Sequential S. S.	M. S.	F
Task Motivation	1	.00	.00	.00
Affiliation Motivation	1	16.13	16.13	1.99
Interaction	1	.70	.70	.08
Error	102	823.76	8.08	

for one and 102 df exceeds the critical value of significance (3.94) at the .05 probability level. Thus, the analysis confirmed the assertion made in Hypothesis One which predicted that high task-motivated adult male bowlers are more successful than low task-motivated bowlers. It was found that the mean final bowling average for high task-motivated adult male bowlers was 168, while the mean for the low task-motivated group was 164. However, when the data were subjected to the Omega Square, it was found that only 3% of the variation could be accounted for. The differences were quite small.

Satisfaction. Table V is a summary of the dependent variable satisfaction. As seen in Table V, the F value for task motivation is approaching zero. Therefore, by virtue of the insignificant F value, high task-motivated adult male bowlers are not more satisfied than low task-motivated adult male bowlers.

Affiliation Motivation for the Variables Success and Satisfaction

Success. The analysis of variance for the dependent variable success, data located in Table IV, reveals an F value of 1.38, which for one and 102 df was not statistically significant. Therefore, high affiliation-motivated adult male bowlers are not more successful than low affiliation-motivated adult male bowlers.

Satisfaction. The data from the analysis of variance for the dependent variable satisfaction are presented in Table V. The obtained F value of 1.99 for one and 102 df was not statistically significant. Therefore, it could be concluded that high affiliation-motivated adult male bowlers are not more satisfied than low affiliation-motivated

adult male bowlers.

Interaction Between Task and Affiliation Motivation For the Variables Success and Satisfaction

The summary in Table IV indicates that the obtained F value of .02 for one and 102 df was not statistically significant for the interaction of the independent variables task and affiliation motivation. Therefore, it could be concluded that adult male bowlers high in task and affiliation motivation are not more successful than adult male bowlers low in both motives or high in one and low in the other.

The data from the analysis of variance for the interaction between task and affiliation for the variables success and satisfaction are presented in Table V. The obtained F value of .08 for one and 102 df was not statistically significant. Therefore, by virtue of the insignificant F value, it could be concluded that adult male bowlers high in task and affiliation motivation are not more satisfied than adult male bowlers low in both motives or high in one and low in the other.

Achievement Motivation as a Dependent Variable

Data collected from the subjects, using Lynn's Achievement Motivation Questionnaire, were analyzed. A two-way analysis of variance computation was performed utilizing the classificatory factors of task and affiliation motivation as variables within the SAS Regression Procedure. The results of this analysis are presented in Table VI.

Task Motivation for the Variable Achievement Motivation

The summary in Table VI shows that the obtained F value of 6.29

TABLE VI
Two-Way Analysis of Variance Utilizing The Subjects'
Achievement Motivation Scores As
The Dependent Variable

Source of Variation	D. F.	Sequential S. S.	M. S.	F
Task Motivation	1	8.53	8.53	6.29*
Affiliation Motivation	1	7.60	7.60	5.61*
Interaction	1	1.69	1.69	1.24
Error	102	138.40	1.36	

* $P < .05$

for one and 102 df exceeds the critical value of significance (3.94) at the .05 probability level. Thus, the analysis confirms the assertion that high task-motivated adult male bowlers were more successful than low task-motivated adult male bowlers and that high task motivated bowlers were also high achievers possessing a disposition to be successful. It was found that the mean achievement motivation score for high task-motivated adult male bowlers was 6.6, while the mean for the low task-motivated group was 4.5 and the mean for the one hundred six subjects was 5.91. When the data were subjected to the Omega Square Test, it was found that only 4% of the variation could be accounted for.

Affiliation Motivation for the Variable Achievement Motivation

The summary in Table VI shows that the obtained F of 5.61 for one and 102 df exceeds the critical value of significance (3.94) at the .05 probability level. Therefore, the analysis confirms the hypothesis which predicts that high affiliation-motivated adult male bowlers are more successful than low affiliation-motivated adult male bowlers. It also confirmed that high affiliation-motivated adult male bowlers are also high achievers. It was found that the mean achievement motivation score for high affiliation-motivated bowlers was 6.6, while the mean for low affiliation-motivated group was 4.5 and the mean score for the one hundred six subjects was 5.91. When the data were subjected to the Omega Square Test, it was revealed that only 4% of the variation could be accounted for. The implication here is that those bowlers who placed a high value on social interaction with teammates were also high achievers who wished to be successful bowlers.

Interaction Between Task and Affiliation Motivation For The Variable Achievement Motivation

The summary in Table VI shows that the F value of 1.24 for one and 102 df was not statistically significant for the interaction of task and affiliation motivation. Therefore, it could be concluded that adult male bowlers high in task and affiliation motivation are not more successful than adult male bowlers low in both motives or high in one and low in the other.

Correlation Matrix

Because of the many variables involved in the present study, a

correlation matrix was computed in order to show the possible relationship among those variables which were analyzed in the previous analyses of variance. The correlation matrix in Table VII shows the Pearson-Product-Moment Correlations computed for five variables emanating from the broader categories of Bowling Inventory, and Achievement Motivation Data.

Success and satisfaction were thought to be closely related. Both success and satisfaction were used as dependent variables and therefore could not be analyzed in one analysis of variance simultaneously. Thus, the Pearson-Product-Moment Correlation was computed. Table VII reveals that there was a lack of correlation between success (final average) and satisfaction. The correlation coefficient between the two variables was .00. For significance at the .05 level, a correlation coefficient of .195 was needed. The implication arising from the lack of relationship between success and satisfaction is that bowlers can be successful or not successful and still be satisfied, or, successful and not satisfied, and finally, satisfied but not successful. These results, though unimportant statistically, are rather representative of competitive bowlers. A bowler may finish the season with an average well above that of successful bowlers, as defined in this study, but may be very dissatisfied with his performance because his achieved final average was lower than his expectations. On the other hand, a bowler may be completely satisfied with a final average which is lower than that of successful bowlers, especially if his current final average is higher than that of his previous final average.

TABLE VII

Correlation Matrix For Five Variables
Pearson-Product-Moment Correlation

	2	3	4	5
1. Final Average (Success)	.09	.06	.20*	.00
2. Lynn's Achievement Motivation Scores		.15	.23*	.10
3. Affiliation Motivation Scores			.25*	.13
4. Task Motivation Scores				.04
5. Satisfaction				

*.195 Significant

The cumulative results taken from Lynn's Achievement Motivation Questionnaire were also utilized as a dependent variable in the present study. Table VII reveals that there was no significant relationship between the Lynn scores and success, or Lynn scores and satisfaction. Thus, it can be assumed that successful bowlers may be high or low achievers and be satisfied or not satisfied with their performance, or, that bowlers can be less successful and high or low achievers or satisfied or not satisfied with their performance.

Final average was related to task motivation. The correlation coefficient of .20 indicated that there was a slight tendency for those bowlers who scored high on the task motivation questionnaire to achieve higher final averages than those who scored low on it. However, it is

interesting to note that all of the bowlers scored high on the task motivation questionnaire and that low task motivation scores were low only in a relative sense. The correlation coefficient was so low that the relationship was unimportant.

A slight relationship existed between Lynn's Achievement Motivation scores and task motivation scores. The correlation coefficient of .23 indicated that those bowlers who scored high on Lynn's Questionnaire tended to score high on the task motivation questionnaire.

A significant relationship existed between affiliation motivation scores and task motivation scores. The correlation coefficient of .25 indicated that those subjects who scored high on the affiliation motivation questionnaire tended to score high on the task motivation questionnaire. However, high and low must be interpreted in a relative sense because all task motivation scores were high. This clustering of high scores for the task motivation variable justified the designation of the group as homogeneous, thus reducing the divergence of the means between the high and low task motivated groups.

Discussion

The analysis of the data collected for the present study produced some rather unexpected results. Some of the effects that might have been in evidence were not in evidence because of the skewness of the distribution. Scores for both task and affiliation motivation were negatively skewed. The group proved to be homogeneous. The majority of the subjects were classified as high task and high affiliation

motivated. Task motivation scores of less than two on a nine-point scale were categorized as high and scores higher than two were categorized as low. Mean affiliation motivation scores were slightly more divergent than the mean task motivation scores. However, affiliation motivation scores of 3.8 or lower were considered to be high while scores higher than 3.8 were used to designate the low category.

The scores for the classificatory variables of task and affiliation motivation were dichotomized at the means rather than at the medians even though the medians would have provided the most equitable distribution under normal conditions.

Marten's (1970) study of the effect of affiliation and task motivation on success and satisfaction of college intramural basketball teams included 1,200 male college students, members of 144 basketball teams. He administered a pre and post-season questionnaire which assessed affiliation and task motivation as well as satisfaction. His teams were categorized into low, moderate and high levels of both affiliation and task motivation. It appears that his groups were determined by ranking the teams in each category and trichotomizing them. It would have been difficult to trichotomize the group utilized in the present study because of the relatively small size of the sample. It is apparent that a much larger sample was needed to obtain a greater divergence between the means of the dichotomized groups. The Greater Greensboro Bowling Association contains approximately one thousand, two hundred sixty-five male bowlers of various levels of bowling experience. A study replicating the present study, including all of the male bowlers in the Association should produce more significant results.

The homogeneity of the group precluded that the differences between the means would be small. Before the data were collected, the investigator had envisioned that the groups being studied would prove to be quite different and that, as the means diverged, the relationship sought would have been unmasked. This did not occur.

The measuring instrument used to assess task and affiliation motivation was adapted from Marten's (1970) Competition and Participation Relations Questionnaire. It was constructed in the form of a nine-choice alternative between two polarities similar to the semantic differential. The scale ranged numerically between one and nine, or, from 'Very important' to 'Not at all important' (see Appendix B). Marten's assessment instrument was used because of its simplicity in design. However; the simplicity of the design may have been the cause of the biased scores. Perhaps a more sophisticated assessment device would have revealed more divergence between the means of the high and low groups.

A partial explanation of the homogeneity of the group would be that competitive bowlers tend to be highly task motivated individuals who bowl to win all of the time. Bowlers of this temperament would not hesitate to declare that it is very important to them to play a sport which they like (bowling) and to win as often as they can. Therefore, it is probable that the homogeneity of the group is a true indication of the participation motivation level of the subjects. To emphasize the point, successful competitive bowlers believe in their own ability to continue to be successful. Persons familiar with the strategy of such bowlers will note the rationale they use in selecting a companion bowler

when entering doubles and singles events in major bowling tournaments. Invariably, a good bowler will select a partner carrying a similar or higher bowling average. The implication is apparent. Atkinson and Feather (1966) proposed that the achievement-oriented person is generally attracted to activities which require the successful exercise of skill among activities that pit his skill against some standard or the skill of others. Highly motivated bowlers respond to success by continually trying to raise their levels of success. If their weekly performances cause their averages to drop to lower levels, they tend to raise their sights and strive to improve on past performances. Thus, highly motivated bowlers tend to partially contradict Atkinson and Feathers' (1966) theory that if a person is successful, he will raise his sights, and if he is unsuccessful, he will lower them. Bowlers seldom fail to rally when their averages drop below a certain level.

Correlation coefficients indicated that no relationship existed among the three dependent variables of success, satisfaction and achievement motivation scores. The lack of relationship provided a strong case for independence. Thus, it was valid to use the ANOVA, regardless of the unequal cells (see Figure 5). The ANOVA is a robust type of test. Thus, all of the assumptions can be violated and still not confound or offset the power of the technique. It is fairly resistant to unequal cells (Winer 1962, p. 96) provided that each cell has at least twelve scores.

The results of the analysis indicated that the data collected from the subjects of Marten's (1970) Competition and Participation

Relations Questionnaire were not significant for affiliation motivation. However, task motivation was significant at the .05 probability level, thus confirming the assertion made in Hypothesis One which predicted that high task motivated adult male bowlers are more successful than low task motivated adult male bowlers. Within the population, those bowlers who were classified as being high task motivated should have earned higher final bowling averages at the end of the 1973-1974 season than the bowlers who were classified as low task motivated. The difference between the means of the two groups, 168 for high task motivated bowlers and 164 for the low task motivated bowlers, was slight. However, the divergence of the means was large enough to discern that a difference did, in fact, exist and that it was statistically significant.

A study on Personality Orientations and Performance in Football Teams, conducted by Cooper and Payne (1967) was the only study found which was concerned with the relationship between task motivation and success. They found that among English football teams a significant correlation of .72 existed between high task motivated coaches and trainers, and team success. They also reported that no significant relationship was found between success and high task motivated players. The present study did reveal a statistically significant relationship between success and high task motivated bowlers, although the degree of relationship was slight.

The rationale which might be used to explain the differences between Cooper & Payne's findings and those of the present study relates to the nature of the two sports. Football is a group-oriented

sport in which the success of the group is directly related to how well each individual cooperates with other members of the group. It is generally accepted that teams which are highly cohesive are more successful. However, Fiedler (1954) and McGrath (1962) reported that a high degree of cohesiveness interfered with effective performance of basketball teams and rifle teams respectively. The authors, in explaining these results, suggested that players on highly cohesive teams may be more concerned with maintaining good interpersonal relations than with effectively playing basketball. McGrath (1962), in a review of small group research studies, lent further support to the argument that good interpersonal relations within work groups do not necessarily lead to increased individual task effectiveness. Therefore, it becomes difficult to evaluate the success of individuals involved in a team sport even though individuals within a team may be high task motivated. However, bowling is strictly an individual sport and success in it is directly related to the skill and expertise of each individual bowler. The bowling environment is static and precise. Nevertheless, success can be accurately measured because the bowling world is rich with standards and criteria by which performance can be compared and measured. Atkinson (1964) believed that 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 consequences of his actions will be either success or failure. McClelland et. al., (1953) defined achievement as a competition with a standard of excellence. On the other hand, Heckhausen (1967) brings McClelland's concept of achievement motivation into sharper focus when he described 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. Thus, it appears that bowlers always participate in an environment rich with symbols and standards of excellence. Hence, the measurement of success achieved by bowlers is more realistic than the measurement of success of individuals involved in football.

When achievement motivation scores of the subjects were used as the independent variable for task and affiliation motivation, significant F values were found for both task and affiliation motivation. The significant F value of 6.29 for one and 102 df at the .05 probability level for task motivation supported the prediction that high task-motivated adult male bowlers are more successful than low task-motivated adult male bowlers. It also indicated that high task-motivated bowlers scored high on Lynn's Achievement Motivation Questionnaire and were thus classified as high achievers imbued with a disposition to be successful. Seventy-one of the subjects were classified as high achievers imbued with a disposition to be successful. Seventy-one of the subjects were classified as high achievers by virtue of the mean achievement motivation score received by the group. When compared with Lynn's criterion groups, the bowlers' mean score of 5.91 was identical to the mean score of the senior managers group. The senior managers group ranked third among the criterion groups and entrepreneurs ranked highest. McClelland (1961) views entrepreneurship as the most favored way of life of the high achiever. Senior managers ranked below entrepreneurs and professors because it was felt that senior

managers had satisfied their achievement aspirations and were less motivated for higher executive positions which were very difficult to achieve. The majority of the subjects utilized in this study were employed as machine operators or semi-skilled workers. However the mean occupation score of 4.3 and a standard deviation of 1.7 (see Table I and Figure 3) indicated that seventy-two of the subjects worked in occupations which ranged between business managers and machine operators or semi-skilled workers. However, the comparison of the experimental group with Lynn's senior manager criterion group, as far as achievement motivation level is concerned, appears to be fairly similar. Thus, it appears that the achievement aspirations of the experimental group would be high.

The summary in Table VI indicates that affiliation motivation was significant when achievement motivation scores were used as the dependent variable. The obtained F of 5.61 for one and 102 df indicated that Hypothesis Three, which predicts that high affiliation motivated adult male bowlers are more successful than low affiliation motivated adult male bowlers, was accepted. The implication here is that Lynn's achievement motivation scores provided a greater divergence between the means of the high and low categories of affiliation motivation than did Marten's competition and participation relations scores. It appears that adult male bowlers who were classified as high affiliation motivated on Marten's scale were not considered to be successful bowlers. However, high affiliation motivated bowlers who scored high on Lynn's Achievement Motivation Questionnaire were also classified as high achievers indicating that they possessed a disposition to be

successful. Therefore, according to Lynn's scores, high affiliation motivated bowlers included in the present study can be successful bowlers.

Satisfaction appeared to be an unimportant factor in the present study. In spite of this, research indicates that there is a relationship between success and satisfaction. Martens and Peterson (1971) found that teams which are successful have greater satisfaction from participation than unsuccessful teams. Carlson (1969) reported that satisfaction is a function of ability and motivation and that there were high correlations between ability and performance for individuals high in motivation. Thus, the level of motivation seemed to affect the relationship between ability and performance.

Summary

The results of three two-way analyses of variance indicated that high task-motivated adult male bowlers were more successful than low task-motivated adult male bowlers. High task-motivated adult male bowlers were also high achievers and successful bowlers. High affiliation motivated bowlers were classified as high achievers. Therefore, high affiliation motivated-high achiever bowlers were also successful bowlers.

Correlation coefficients indicated that there was no relationship among success, satisfaction and achievement motivation.

CHAPTER V
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the effect of task and affiliation motivation on success and satisfaction of members of selected adult male bowling teams registered with the Greater Greensboro Bowling Association.

The existing literature on motivation was reviewed from the theoretical, performance and affiliation point of view. The theoretical approach focused on the early theories of motivation and their evolution into the theories and concepts which are currently accepted in the field of psychology. The performance factor focused on studies which dealt with success and satisfaction as they related to participation in sports and other similar activities. Affiliation focused on small group and team relationships with special emphasis on cohesiveness.

The study was conducted in the Spring of 1974, in Greensboro, North Carolina, with the Friendly Lanes bowling establishment serving as the focal point for the study. One hundred and six adult male bowlers, all members of the Metro 850 or Century Leagues participated in the study. All of the subjects were sanctioned by the ABC and both leagues were registered with the GGBA.

Assessing Participation Motivation

Task motivation, affiliation motivation and satisfaction were assessed by a self report questionnaire which was a modified version of

Marten's Competition and Participation Relations Questionnaire. The final bowling averages for the 1973-1974 bowling season were used as a measure of success. Lynn's Achievement Motivation Questionnaire was used to collect data which were used to separate the bowlers into categories of high and low achievers. A demographic data questionnaire was designed to solicit personal information such as age, education classification and occupation. It also included a bowling inventory for collecting data on bowling mechanics and bowling achievements of each subject.

Collecting the Data

All questionnaires were mailed to the subjects accompanied by a return self-addressed, stamped envelope. Each subject completed the questionnaire in the privacy of his home. Thus, it was assumed that all responses represented the true feeling of each subject, free of the influence of teammates.

Statistical Design

The statistical design for the study involved the use of the computer terminal at the University of North Carolina at Greensboro which utilizes the services of the Triangle Universities Computation Center (T.U.C.C.) which uses the IBM 70. The Statistical Analysis System program was used for all computational work.

Classifying Subjects Into Groups of Relatively High and Low Task and Affiliation Motivation

An attempt was made to equitably separate the subjects into high and low task and affiliation motivation groups. A scatter plot of the

distribution was run, and it was found that the population of subjects was disproportionately represented by having high scores on both variables. The subjects were divided into quadrants having as equitable representation as possible.

Analysis of Variance

The intended analysis of variance procedure would have resulted in the confounding of the factors of task and affiliation motivation. Subsequently, a test of the lack of independence between factors was run using the SAS Regression procedure which confirmed confounding. Analysis of variance computations were performed by coding task and affiliation motivation as dummy variables within the SAS Regression procedure.

Task Motivation and Affiliation Motivation For The Dependent Variables Success and Satisfaction

Two two-way analyses of variance were computed, one for task and the other for affiliation motivation, to detect any differences that might exist between the high and low task motivated bowlers or high and low affiliation motivated individuals.

There was a significant difference between the means of the final bowling averages for high and low task motivated bowlers. It was found that high task motivated adult male bowlers were more successful than low task motivated adult male bowlers. There were no statistically significant differences for the dependent variable of satisfaction.

With respect to affiliation motivation and the dependent variables of success and satisfaction, group differences were not statistically significant.

The interaction between the two main effects and the dependent variables was not statistically significant.

Task and Affiliation Motivation for the Variable Disposition to be Successful

One two-way analysis of variance was performed to determine if a difference existed between the categories of high and low disposition to be successful.

There was a significant difference between the means for the high and low task motivated groups. The results indicate that the high task motivated bowlers were also classified as high achievers with a disposition to be successful and that as high achievers they were also successful bowlers.

Correlation coefficients indicated that no relationship existed among the three dependent variables.

Conclusions

On an a priori basis, it was originally stated that high task and high affiliation-motivated adult male bowlers are more successful and satisfied than low task and low affiliation-motivated adult male bowlers. The study did not confirm that high task and high affiliation motivated adult male bowlers are more successful and satisfied than low task and low affiliation motivated adult male bowlers. However, within the limitations of this study, the following conclusions can be drawn:

1. High task motivated adult male bowlers associated with the Metro 850 and Century Leagues were more successful bowlers than the low task motivated adult male bowlers

- of the leagues.
2. Affiliation motivation does not influence, either positively or negatively, the success of high task motivated adult male bowlers associated with the Metro 850 and Century Leagues.
 3. Adult male bowlers who have had at least eleven years of competitive bowling experience tend to be high task motivated bowlers but not necessarily successful bowlers.
 4. Adult male bowlers in the Metro 850 or Century Leagues who were classified as high task motivated on Marten's Competition and Participation Relations Questionnaire were also classified as high achievers on Lynn's Achievement Motivation Questionnaire.
 5. There was no relationship among the three dependent variables of success, satisfaction and achievement motivation scores. The adult male bowlers of the Metro 850 and Century Leagues can be successful or not successful and satisfied or not satisfied while being either high or low achievers, or, they can be satisfied or not satisfied while being successful or not successful and either high or low achievers and finally, high or low achievers can be successful or not successful while being satisfied or not satisfied.

Recommendations

Based on the analyses and discussion of the data in Chapter IV and the conclusions drawn from the analyses, several recommendations

seem to be in order.

1. If this study is replicated, it is suggested that the population be increased. The present study included one hundred and six subjects and the results indicated that the group was homogeneous. The difference between the means for the dependent variable of success was small. Thus, the power of the test was very low.
2. A follow-up study is recommended with the major emphasis on utilizing a stratified random sample technique involving a large number of adult male bowlers.
3. It is recommended that a similar study be conducted with the major emphasis being placed on affiliation motivation as the prime independent variable.
4. If subsequent studies of adult male bowlers or other groups are conducted, it is recommended that a more sophisticated technique be used for assessing task and affiliation motivation.
5. A follow-up study is recommended utilizing adult female bowlers.
6. A similar study utilizing junior, male bowlers between the ages of fifteen and twenty years of age is recommended.

7. It is recommended that a similar study be conducted utilizing adult mixed-bowling teams.

BIBLIOGRAPHY

BIBLIOGRAPHY

- American Bowling Congress. Constitution Specifications and Rules. Greendale, Wisconsin: American Bowling Congress Headquarters, 1974.
- Applebaum, M. & Cramer, E. Some Problems in the Non Orthogonal Analysis of Variance. Psychological Bulletin, 1974 81(6), pp. 335-343.
- Atkinson, J. W., The Achievement Motive and the Recall of Interrupted Tasks, Journal of Experimental Psychology, 1953, 46, 381-390.
- Atkinson, J. W. (ed.) Motives in Fantasy, Action and Society. Princeton: Van Nostrand, 1958.
- Atkinson, J. W. Thematic Apperception Measurement of Motives Within the Context of a Theory of Motivation, Motives in Fantasy, Action and Society, (ed) by J. W. Atkinson. Princeton: D. Van Nostrand Company, Inc., 1958.
- Atkinson, J. W. An Introduction to Motivation. Princeton, New Jersey: Van Nostrand, 1964, pp. 240-241 & 240-247.
- Atkinson, J. W. Motivational Determinants of Risk Taking Behavior. A Theory of Achievement Motivation, (ed) by John W. Atkinson and Norman T. Feather. New York: John Wiley and Sons, Inc., 1966, pp. 12-20.
- Atkinson, J. W. & Feather, N. T. A Theory of Achievement Motivation. New York: John Wiley and Sons, 1966, pp. 5, 241-247.
- Atkinson, J. W. & Litwin, G. H. Achievement Motive and Test Anxiety Conceived as Motive to Approach Success and Motive to Avoid Failure, Journal of Abnormal and Social Psychology, 1960 60(1), pp. 52-63.
- Bass, B. M. The Orientation Inventory. Palo Alto, California: Consulting Psychological Press, 1962.
- Bass, B. M. Social Behavior and the Orientation Inventory: A Review, Psychological Bulletin, 1967 68 pp. 260-292.
- Bass, B. M., Dunteman, G. H., Frye, R., Vidulich, R., & Wambach, H. Self-Interaction-and Task-Oriented Inventory Scores Associated With Overt Behavior and Personal Factors. Educational and Psychological Measurement. 1963 23 pp. 101-116.

- Bethe, D. R. Success in Beginning Handball as a Function of the Theory of Achievement Motivation. Thesis, Ohio State University, Columbus, Ohio: (University Microfilms, 1968).
- Bilodeau, E. A. & Bilodeau, I. Motor Skills Learning. Annual Review of Psychology. 1961, 12, 250.
- Bock, R. O. & Haggard, E. A. The Use of Multivariate Analysis of Variance in Behavioral Research. Handbook of Measurement and Assessment in Behavioral Sciences. D. K. Whitla (ed) Reading, Massachusetts: Addison-Wesley, 1968.
- Bouet, M. Integrational Functions of Sport in the Light of Research Based on Questionnaires. International Review of Sport Sociology. 1969, 4, 129-134.
- Carlson, R. E. The Effect of Satisfaction on the Relationship Between Abilities and Satisfactoriness. Occupational Psychology. 1969, 43, 39-46.
- Clarke, D. E. Measures of Achievement and Affiliation Motivation. Review of Educational Research. 1973, 43 (Win.) (1), 41-51.
- Cohen, J. Statistical Power Analysis For The Behavioral Sciences. New York: Academic Press, 1969.
- Cooley, W. W. & Lohnes, P. R. Multivariate Procedures for the Behavioral Sciences. New York: John Wiley and Sons, 1962, 244.
- Cooper R., & Payne, R. Personality Orientations and Performance in Football Teams: Leaders and Subordinates Orientation Related to Team Success. Organizational Psychology Group Report No. 1, January, 1967, University of Ashton, Department of Industrial Administration.
- Costello, C. G. Two Scales to Measure Achievement Motivation. Journal of Psychology. 1967, 66, 231-235.
- Costello, C. G. Need Achievement and College Performance. Journal of Psychology. 1968, 69, 17-18.
- Deutsch, M. The Effects of Cooperation and Competition on Group Processes. Group Dynamics. D. Cartwright and A. Zander (Eds.), Evanston, Illinois: Row and Peterson, 1953.
- Feather, N. T. The Relationship of Persistence at a Task to Expectation of Success and Achievement Related Motives. Journal of Abnormal Social Psychology. 1961, 63, 552-561.

- Feather, N. T. Persistence at a Difficult Task With Alternative Task of Intermediate Difficulty. Journal of Abnormal and Social Psychology, 1963, 66, 604-609.
- Feather, N. T. Performance at a Difficult Task in Relation to Initial Expectation of Success, Test Anxiety, and Need Achievement. Journal of Personality. 1965, 33, (2), June, 200-217.
- Festinger, L. A Theory of Social Comparison Processes. Human Relations. 1954, 7, 117-140.
- Festinger, L., Pepitone, A., & Newcomb, T. Some Consequences of Deindividuation in a Group. Journal of Abnormal Social Psychology. 1952, 47, 382-389.
- Fiedler, F. E. The Psychological Distance Dimension in Interpersonal Relations. Journal of Personality. 1953, 22, 142-150.
- Fiedler, F. E. Assumed Similarity Measures as Predictors of Team Effectiveness. Journal of Abnormal Social Psychology. 1954, 49 381-388.
- Firestone, I. J., Kaplan, K. J., & Russell, J. C. Anxiety, Fear and Affiliation with Similar-State Versus Dissimilar-State Others: Misery Sometimes Loves Non-Miserable Company. Journal of Personality and Social Psychology. 1973, 26, June, (3), 409-444.
- French, E. G. Some Characteristics of Achievement Motivation. Journal of Experimental Psychology. 1955, 50, (4), 232-236.
- French, E. G. Development of a Measure of Complex Motivation, In J. W. Atkinson (Ed.), Motives in Fantasy, Action and Society. Princeton: Van Nostrand, 1958, 242-248.
- French, E. G. Effects of Interaction of Motivation and Feedback on Task Performance. In John W. Atkinson (Ed.) Motives in Fantasy, Action and Society. Princeton: Van Nostrand, 1958.
- Gilchrist, J. C. The Formation of Social Groups Under Conditions of Success and Failure. Journal of Abnormal Social Psychology. 1952, 47, 174-187.
- Greater Greensboro Bowling Association. Eleventh Annual A.B.C. & A.J.B.C. Yearbook of 1972-1973 Averages. Greensboro, North Carolina: Greater Greensboro Bowling Association, 1974.
- Gross, N. & Martin, W. E. On Group Cohesiveness. American Journal of Sociology. 1952, 57, 546-554.

- Guilford, J. P. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill, 1965.
- Hays, W. L. Statistics. New York: Holt, Rinehart and Winston, 1963.
- Healey, T. R. & Landers, D. M. Effect of Need Achievement and Task Difficulty on Competitive and Noncompetitive Motor Performance. Journal of Motor Behavior. 1973, 5,(2), 121-128.
- Hollander, E. Principles and Methods of Social Psychology. New York: Oxford University Press, 1967, 383.
- Hollingshead, A. B. Two-Factor Index of Social Position. Unpublished Manuscript, 1957. (Available from 1965 Yale Station).
- Krech, D., Crutchfield, R. S., & Ballachey, E. L. Individual in Society. New York: McGraw-Hill, 1962.
- Lawther, J. D. The Learning of Physical Skills. Englewood Cliffs: Prentice-Hall, Incorporated, 1968.
- Lenk, H. Top Performance Despite Internal Conflict: An Antithesis to a Functionalistic Proposition, in Loy, J. W. and Kenyon, G.S. (Eds.) Sport, Culture and Society. London: The McMillan Company, 1969, 393-397.
- Locke, E. A., Cortledge, N. S. & Knerr, C. S. Studies of the Relationship Between Satisfaction, Goal Setting and Performance, Organizational Behavior and Human Performance. 1970, 5, (2), 135-158.
- Lynn, R. An Achievement Motivation Questionnaire. British Journal of Psychology. 1969, 60, (4), 529-534.
- Lynn, R. Personality Characteristics of a Group of Entrepreneurs. Occupational Psychology. 1969, 43, (2), 151-152, (PA 44: 17595).
- Madsen, K. B. Theories of Motivation. Cleveland: Howard Allen, Incorporated, 1961.
- Mandler, G., & Sarason, S. B. A Study of Anxiety and Learning. Journal of Abnormal Social Psychology. 1952, 47, 166-173.
- Martens, R. Influence of Participation Motivation on Success and Satisfaction in Team Performance. Research Quarterly. 1970, 4, 510-518.
- Martens, R. Influence of Success and Residential Affiliation on Participation Motivation. Journal of Leisure Research. 1971, 1, Winter, 53-58.

- Martens, R., & Peterson, J. A. Group Cohesiveness as a Determinant of Success and Member Satisfaction in Team Performance. International Review of Sport Sociology. 1971, 6.
- Maslow, A. H. Motivation and Personality. New York: Harper and Row, 1970.
- McClelland, D. C. Methods of Measuring Human Motivation, J. W. Atkinson (Ed.) Motives in Fantasy, Action and Society. Princeton: Van Nostrand, 1958, 7-42.
- McClelland, D. C. The Achieving Society. Princeton: Van Nostrand, 1961.
- McClelland, D. C., Atkinson, J. W., Clarke, R. A., & Lowell, E. L. The Achievement Motive. New York: Appleton-Century Crofts, 1953.
- McClelland, D. C., & Liberman, A. M. The Effect of Need Achievement on Recognition of Need-Related Words, Journal of Personality. 1949, 18, pp. 236-251.
- McGrath, J. E. A Framework for Integration of Small Group Research Studies: A Pilot Study. Arlington, Virginia: Psychological Research Associates, 1957, PRA No. 57-20.
- McGrath, J. W. The Influence of Positive Interpersonal Relations on Adjustment Effectiveness in Rifle Teams. Journal of Abnormal and Social Psychology. 1962, 65, 365-375.
- McReynolds, P. The Motives To Attain Success and To Avoid Failure: Historical Note, Journal of Individual Psychology. 1968, 24, (2), 157-161.
- Metro 850 League. First Annual Metro 850 Yearbook--1973-1974. Greensboro, North Carolina: Metro 850 League, 1974.
- Meyers, A. Team Competition, Success, and the Adjustment of Group Members. Journal of Abnormal and Social Psychology. 1962, 65, (5), 325-332.
- Mower, O. H. Motivation. Annual Review of Psychology. 1952, 3, 419-438.
- Murray, H. W. Explorations in Personality. New York: Oxford University Press, 1938.
- Murray, E. J. Motivation and Emotion. Englewood Cliffs: Prentice Hall, 1964.

- Ogilvie, B. C. Model for General Psychological Adaptation. Track Techniques. 1964, December, 428.
- Ogilvie, B. C. Psychological Consistencies Within the Personality of High-Level Competitors. Journal of the American Medical Association. 1968, 205, 156-162.
- Peterson, J. W. & Martens, R. Success and Residential Affiliation as Determinants of Team Cohesiveness. Research Quarterly. 1972, 43, (1), 62.
- Peterson, S., Weber, J. & Trousdale, W. Personality Traits of Women in Team Sports Vs. Women in Individual Sports. Research Quarterly. 1967, 38, (4), 686-690.
- Phillips, B. N. & D'Amico, L. A. Effects of Cooperation and Competition on Cohesiveness of Small Face-To-Face Groups. Journal of Educational Psychology. 1956, 47, 65-70.
- Sargent, S. S., & Williamson, R. C. Social Psychology. New York: The Ronald Press, 1966, (3rd. Ed.).
- Sarason, S. B., Mandler, G. & Caighill, P. G. The Effects of Differential Instructions on Anxiety and Learning. Journal of Abnormal Social Psychology. 1952, 47, 561-565.
- Schacter, S. An Experimental Study of Cohesiveness and Productivity. Human Relations. 1951, 4, 229-238.
- Schacter, S. The Psychology of Affiliation: Experimental Studies of the Sources of Gregariousness. Stanford: Stanford Press, 1959.
- Schnellback-Nordmann, M. L. Psychology and Sociology of Games, Including the Enjoyment and the Risks During the Process of Productivity. Contemporary Psychology of Sport. Chicago, Illinois: The Athletic Institute, 1970, 427-433.
- Service, J. A User's Guide to the Statistical Analysis System. Raleigh: Sparks Press. 1972.
- Shelley, H. P. Focussed Leadership and Cohesiveness in Small Groups, Sociometry. 1951, 4, 229-238.
- Sherwood, J. J. Self Report and Projective Measures of Achievement and Affiliation. Journal of Consulting Psychology. 1966, 30, 329-333.
- Shipley, T. E. & Veroff, J. A. A Projective Measure of Need for Affiliation. Journal of Experimental Psychology. 1952, 43, 349-356.

- Singer, R. Motor Learning and Human Performance. London: The McMillan Company, 1970.
- Sorrentino, R. M. An Extension of Theory of Achievement Motivation to the Study of Emergent Leadership. Journal of Personality and Psychology. 1973, (June), 26, (3), 356-168.
- Thibaut, J. An Experimental Study of the Cohesiveness of Underprivileged Groups. Human Relations. 1950, 3, 251-278.
- Tutko, T. & Ogilvie, B. The Role of the Coach in the Motivation of Athletes. In Motivation in Play Games and Sports, (ed.) by Ralph Slovenko and James A. Knight. Springfield, Illinois: Charles Thomas, 1967, 355-366.
- Twenty-First Annual American Bowling Congress Yearbook, Greendale: American Bowling Congress, 1974.
- Vanek, M. Psychological Problems of Superior Athletes--Some Experiences From the Olympic Games in Mexico City, 1968. Contemporary Psychology of Sport. Chicago, Illinois: The Athletic Institute, 1970, 183-185.
- Ward, S. The Superior Athlete. In Motivation in Play Games and Sports, (Ed.) by Ralph Slovenko and James A. Knight. Springfield, Illinois: Charles Thomas, 1967.
- Weinstein, M. S. Achievement Motivation and Risk Preference. Journal of Personality and Social Psychology. 1969, 13, (2), 153-172.
- Willis, J. D. Achievement Motivation, Success and Competitiveness in College Wrestlers. (Doctoral Dissertation, Ohio State University), Columbus, 1968, (Ph.D. BF 199 Micro. Card).
- Winer, B. Statistical Principles in Experimental Design. New York: McGraw-Hill, 1962.
- Wohl, A. Prognostic Models of Sport in Socialist Countries on the Background Changes in Sports in Peoples Poland. International Review of Sport Sociology. 1971, 6, 17-44.
- Youngleson, M. L. The Need to Affiliate and Self-esteem in Institutionalized Children, Journal of Personality and Social Psychology. 1973 (May), 26, (2), 280-286.

APPENDIXES

APPENDIX A

Greater Greensboro Bowling Association Sanctioning Record for 1973-1974

Lane Schedules for Fourteen-Team Leagues

SANCTIONING -- APRIL 25, 1974

TYPE TEAM	<u>BRUNSWICK FRIENDLY</u>		<u>PIEDMONT</u>		<u>TOTAL</u>	<u>TOTAL</u>
	NO. TEAMS	NO. BOWLERS	NO. TEAMS	NO. BOWLERS	NO. TEAMS	NO. BOWLERS
5-Man	52	241	39	165	91	406
4-Man	20	70	20	82	40	152
3-Man	68	175	22	66	90	241
2-Man	-	-	8	14	8	14
Mixed	307	589	180	397	487	986
Cons. Cards	-	116	-	78	-	194
C. A. Fee	-	6	-	6	-	12
TOTALS	447	1,197	269	808	716	2,005

NUMBER OF LEAGUES

TYPE LEAGUE	BRUNSWICK FRIENDLY	PIEDMONT	TOTAL
All Men	14	9	23
Mixed Leagues	31	18	49
TOTAL LEAGUES	45	27	72

Marvin G. King, Secretary-Treasurer
Greater Greensboro Bowling Association

LANE SCHEDULE FOR FOURTEEN-TEAM LEAGUES

Metro 850 and Century Leagues
1973-1974

DATES *	LANES:	27-28	29-30	31-32	33-34	35-36	37-38	39-40
1. Sept. 5		1- 2	3- 4	5- 6	7- 8	9-10	11-12	13-14
2. Sept. 12		8- 5	7-10	2-11	3- 1	14- 4	6-13	9-12
3. Sept. 19		7- 6	8- 9	1-12	4- 2	13- 3	5-14	11-10
4. Sept. 26		12- 4	13- 2	14- 7	9- 6	8-11	10- 1	3- 5
5. Oct. 3 (P.R.)**		-	-	-	-	-	-	-
6. Oct. 10		2- 9	1-14	8-13	10- 5	12- 7	3-11	4- 6
7. Oct. 17		13-10	5-12	9- 3	2- 7	1- 6	4- 8	14-11
8. Oct. 24		6- 8	9- 7	4-10	1-11	3-14	13- 5	12- 2
9. Oct. 31(P.R.)		-	-	-	-	-	-	-
10. Nov. 7		5- 1	10- 6	3- 8	12-13	11- 9	14- 2	7- 4
11. Nov. 14		3-12	11-13	7- 1	6-14	5- 2	9- 4	10- 8
12. Nov. 21		4-11	14- 8	6- 2	5- 9	10-12	7- 3	1-13
13. Nov. 28(P.R.)		-	-	-	-	-	-	-
14. Dec. 5		9-14	4- 1	11- 5	8-12	7-13	2-10	6- 3
15. Dec. 12		10- 3	6-11	12-14	13- 4	2- 8	1- 9	5- 7
16. Dec. 19		11- 7	2- 3	13- 9	14-10	4- 5	12- 6	8- 1
17. Jan. 2 (P.R.)		-	-	-	-	-	-	-
18. Jan. 9		14-13	10- 9	2- 1	6- 5	8- 7	4- 3	12-11
19. Jan. 16		12- 9	4-14	5- 8	11- 2	1- 3	10- 7	13- 6
20. Jan. 23		10-11	3-13	6- 7	12- 1	2- 4	9- 8	14- 5
21. Jan. 30		5- 3	11- 8	4-12	7-14	6- 9	2-13	1-10
22. Feb. 6 (P.R.)		-	-	-	-	-	-	-
23. Feb. 13		6- 4	7-12	9- 2	13- 8	5-10	14- 1	11- 3
24. Feb. 20		11-14	6- 1	10-13	3- 9	7- 2	12- 5	8- 4
25. Feb. 27		2-12	14- 3	8- 6	10- 4	11- 1	7- 9	5-13
26. Mar. 6 (P.R.)		-	-	-	-	-	-	-
27. Mar. 13		4- 7	9-11	1- 5	8- 3	13-12	6-10	2-14
28. Mar. 20		8-10	2- 5	12- 3	1- 7	14- 6	13-11	4- 9
29. Mar. 27		13- 1	12-10	11- 4	2- 6	9- 5	8-14	3- 7
30. Apr. 3 (P.R.)		-	-	-	-	-	-	-
31. Apr. 10		3- 6	13- 7	14- 9	5-11	12- 8	1- 4	10- 2
32. Apr. 17		7- 5	8- 2	3-10	14-12	4-13	11- 6	9- 1
33. Apr. 24		1- 8	5- 4	7-11	9-13	10-14	3- 2	6-12
34. May 1 (P.R.)		-	-	-	-	-	-	-
35. May 8 (P.R.)		-	-	-	-	-	-	-

*The Century League began on Tuesday, September 4 and continued on consecutive Tuesdays. It used Lanes 1-14.

** Position Round

APPENDIX B

Introductory Letter to Bowlers

**Return Postal Card for Soliciting Bowler's Initial Attitude
Toward Participating in the Proposed Study**

The Letter of Transmittal Sent With Questionnaires

Demographic Questionnaire

Competition and Participation Relations Questionnaire

Achievement Motivation Questionnaire

801 Cambridge Street
Greensboro, North Carolina 27406
March 1, 1974

Mr. Charles P. Winkle
2775 Courtney Lane
Greensboro, North Carolina 27408

Dear Chuck:

Now that the 1973-1974 bowling season is rapidly coming to an end, I am certain that you have been bowling much better than you had hoped to bowl.

By the way! Have you ever thought about why you go to the bowling lanes so consistently and bowl with the same men night after night, roll the same old beat-up ball, take the same number of steps in your approach, deliver each ball in the same manner and, yes, complain to the heavens when you "blow" a good game, but exhibit great elation when you roll a 200 game or a 600 set? Why are you so involved in bowling?

I am eager to conduct a study on selected adult male bowlers who are registered with the Greater Greensboro Bowling Association. The members of the Metro 850 and Century Leagues have been selected to participate in this study because they are the two largest leagues in the Association consisting of one hundred fifteen men, or 14% of the eight hundred thirteen men in the twenty-three all male leagues.

Because you are an active bowler in the Metro 850 or Century League, I am inviting you to participate in this study. Your participation would consist of completing a simple information questionnaire, responding "yes" or "no" to eight questions, indicating your feelings on three important questions by circling a single number and, finally, bowling your very best scores for the remainder of the season. All personal information collected for this study will be treated confidentially. For this reason, each bowler will be identified by a code number.

Enclosed is a self-addressed, stamped postal card. If you are willing to participate in this study, please check the "yes" statement on the card and return it to me. A questionnaire and other material will be mailed to you after I receive your postal card. Your cooperation in this endeavor will be appreciated.

Yours in Bowling,

Bert C. Piggott
Captain, Big-5

Enclosure

Return Postal Card Used For Soliciting Bowler's
Initial Attitude Toward Participating
In The Proposed Study

Identification Symbol _____ *

Bert, I have read your letter relating to the
proposed study involving the bowlers in the Metro 850
and Century Leagues.

_____ Yes, I will participate in this study.

_____ No, I do not wish to participate in this study.

COMMENTS _____

*Identification symbols were placed on the cards before they were
mailed to the bowlers.

801 Cambridge Street
Greensboro, North Carolina 27406
April 4, 1974

Dear Fellow Bowler:

The response to my initial letter concerning the proposed study involving the members of the Metro 850 and Century Leagues has been overwhelmingly positive. Your enthusiasm has been a real source of encouragement to me.

The enclosed questionnaires, when completed, will supply the data needed for the study. Your prompt action in returning the completed questionnaires is vitally important to my effort of collecting all data before May 8. I have enclosed a post-paid, self-addressed envelope for your convenience in returning the questionnaires.

Your cooperation in this project is deeply appreciated.

Yours in Bowling,

Bert C. Piggott
Captain, Big-5

BCP:LCP

Enclosures 2

DEMOGRAPHIC QUESTIONNAIRE

Please respond to the following questions by checking the appropriate answer or supplying the word or words which will provide the best answer.

I. PERSONAL DATA:

Identification number ____, Age ____, Weight ____, Height ____.

II. EDUCATION: Check only the highest level achieved.

- | | |
|-------------------------------|------------------------------------|
| 1. Less than high school ____ | 5. Advanced degree(s) & Prof. ____ |
| 2. High school diploma ____ | 6. Certificate-Tech. inst. ____ |
| 3. Some college ____ | 7. Diploma-Jr. or Comm. Col. ____ |
| 4. College degree ____ | 8. Apprenticeship ____ |

III. OCCUPATION:

1. What is the nature of your full-time occupation? _____

2. Your major income is based on: hourly wages ____; salary ____; commissions ____; retirement or pension ____; percentage of profit ____; contract ____.

IV. BOWLING INVENTORY:

1. Do you bowl with your right hand ____, or left hand ____?
2. How many steps do you take in your approach? 3 ____, 4 ____, 5 ____, 6 ____, 7 ____
3. After you release your ball on the lane, it curves ____, hooks ____, backs up ____, goes straight ____.
4. How many years have you participated in bowling? ____ years
5. How many years have you participated in the Metro 850 or Century Leagues? ____ years

6. What was your beginning average for the 1973-1974 season?
Average_____
7. What is your all-time high game score? Game score_____
8. What is your all-time high set score? Set score_____
9. How many times have you participated in these tournaments?
A. Greensboro City Tournament_____ C. Southeastern Tour._____
B. North Carolina State Tour._____ D. National ABC Tour._____
10. Using your best judgement, estimate what your final average
will be in the Metro 850 or Century League. Average_____

COMPETITION AND PARTICIPATION RELATIONS QUESTIONNAIRE

Identification Number _____

There are many reasons for participation in an activity such as bowling. These specific reasons may usually be classified into two broad categories: (1) Opportunity to associate with others, and (2) The intrinsic enjoyment of bowling. Using the scales below as references, indicate how important each of these reasons is for your participation in bowling by circling the number which best reflects your feeling.

- | | | |
|--|--|----------------------|
| 1. To associate with other members of my team and have a good time | <u>: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : 9 :</u>
Very important | Not at all important |
| 2. To play a sport I like very much and to win as often as I can | <u>: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : 9 :</u>
Very important | Not at all important |
| 3. How satisfied are you with the performance of your team as a whole? | <u>: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : 9 :</u>
Very satisfied | Not at all satisfied |

ACHIEVEMENT MOTIVATION QUESTIONNAIRE

Identification Number _____

Please answer the following eight questions by circling either the YES or NO. There are no right or wrong answers to these questions. It is impossible to get a good or bad score on this scale.

- | | | |
|--|-----|----|
| 1. Do you find it easy to relax completely when you are on holiday? | Yes | No |
| 2. Do you feel annoyed when people are not punctual for appointments? | Yes | No |
| 3. Do you dislike seeing things wasted? | Yes | No |
| 4. Do you like getting drunk? | Yes | No |
| 5. Do you find it easy to forget about your work outside normal working hours? | Yes | No |
| 6. Would you prefer to work with a congenial but incompetent partner, rather than with a difficult but highly competent one? | Yes | No |
| 7. Does inefficiency make you angry? | Yes | No |
| 8. Have you always worked hard in order to be among the best in your own line? | Yes | No |

APPENDIX C
Occupational Scale

The Occupational Scale

1. Higher Executives, Proprietors of Large Concerns, and Major Professionals

a. Higher Executives

Bank Presidents; Vice Presidents Judges (Superior Courts) Large Business, e.g., Directors, Presidents, Vice Presidents, Assistant Vice-Presidents, Executive Secretary, Treasurer	Military, Commissioned Officers, Major and above, Officials of the Executive Branch of Govt., Federal, State, Local, e.g., Mayor, City Manager, City Plan Director, Internal Revenue Directors. Research Directors, Large Firms
---	--

b. Large Proprietors (Value over \$100,000) (The value of businesses is based upon the rating of financial strength in Dun and Bradstreet's Manual.)

Brokers Contractors	Dairy Owners Lumber Dealers
------------------------	--------------------------------

c. Major Professionals

Accountants (C.P.A.) Actuaries Agronomists Architects Artists, Portrait Astronomers Auditors Bacteriologists Chemical Engineers Chemists Clergyman (Professionally Trained) Dentists	Economists Engineers (College Grad.) Foresters Geologists Lawyers Metallurgists Physicians Physicists, Research Psychologists, Practicing Symphony Conductors Teachers, University, College Veterinarians (Veterinary Surg.)
---	---

2. Business Managers, Proprietors of Medium Sized Businesses, and Lesser Professionals

a. Business Managers in Large Concerns

Advertising Directors Branch Managers Brokerage Salesmen District Managers Executive Assistants Executive Managers, Govt. Officials minor, e.g., Internal Revenue Agts Farm Managers	Office Managers Personnel Managers Police Chief; Sheriff Postmaster Production Managers Sales Engineers Sales Managers, National Concerns Sales Managers (Over \$100,000)
---	--

b. Proprietors of Medium Businesses (Value \$34,000-\$100,000)

Advertising Owners (-\$100,000)	Manufacturer's Representatives
Clothing Store Owners (-\$100,000)	Poultry Business (-\$100,000)
Contractors (-\$100,000)	Purchasing Managers
Express Company Owners (-\$100,000)	Real Estate Brokers (-\$100,000)
Fruits, Wholesale (-\$100,000)	Rug Business (-\$100,000)
Furniture Business (-\$100,000)	Store Owners (-\$100,000)
Jewelers (-\$100,000)	Theater Owners (-\$100,000)
Labor Relations Consultants	

c. Lesser Professionals

Accountants (Not C.P.A.)	Military, Commissioned
Chiropodists	Officers, Lts., Captains
Chiropractors	Musicians (Symphony Orchestra)
Correction Officers	Nurses
Director of Community House	Opticians
Engineers (Not College Graduates)	Pharmacists
Finance Writers	Public Health Officers (M.P.H.)
Health Educators	Research Assistants, University
Librarians	(Full-time)
	Social Workers
	Teachers (Elem. and High Sch.)

3. Administrative Personnel, Small Independent Businesses, and Minor Professionals

a. Administrative Personnel

Adjusters, Insurance	Section Heads, Federal, State
Advertising Agents	and Local Govt. Offices
Chief Clerks	Section Heads, Large Businesses
Credit Managers	and Industries
Insurance Agents	Service Managers
Managers, Department Stores	Shop Managers
Passenger Agents--R.R.	Store Managers (Chain)
Private Secretaries	Traffic Managers
Purchasing Agents	
Sales Representatives	

b. Small Business Owners(\$6,000-\$35,000)

Art Gallery	Cigarette Machines
Auto Accessories	Cleaning Shops
Awnings	Clothing
Bakery	Coal Businesses
Beauty Shop	Convalescent Homes
Boatyard	Decorating
Brokerage, Insurance	Dog Supplies
Car Dealers	Dry Goods
Cattle Dealers	Engraving Business
Feed	Electrical Contractors
Finance Co., Local	Package Store (Liquor)
Fire Extinguishers	Painting Contracting
Five & Ten	Plumbing
Florist	Poultry Producers
Food Equipment	Publicity & Public Relations
Food Products	Real Estate
Foundry	Records and Radios
Funeral Directors	Restaurant
Furniture	Roofing Contractor
Garage	Shoe
Gas Station	Shoe Repairs
Glassware	Signs
Grocery-General	Tavern
Hotel Proprietors	Taxi Company
Inst. of Music	Tire Shop
Jewelry	Trucking
Machinery Brokers	Trucks and Tractors
Manufacturing	Upholstery
Monuments	Wholesale Outlets
	Window Shades

c. Semi-Professionals

Actors and Showmen	Morticians
Army M/Sgt.; Navy C.P.O.	Oral Hygienists
Artists, Commercial	Photographers
Appraisers (Estimators)	Physio-therapists
Clergymen (Not professionally trained)	Piano Teachers
Concern Managers	Radio, T.V. Announcers
Deputy Sheriffs	Reporters, Court
Dispatchers, R.R. Train	Reporters, Newspaper
I.B.M. Programmers	Surveyors
Interior Decorators	Title Searchers
Interpreters, Court	Tool Designers
Laboratory Assistants	Travel Agents
Landscape Planners	Yard Masters R. R.

d. Farmers

Farm Owners (\$25,000-\$35,000)

4. Clerical and Sales Workers, Technicians, and Owners of Little Businesses (Value under \$6,000)a. Clerical and Sales Workers

Bank Clerks and Tellers	Factory Storekeeper
Bill Collectors	Factory Supervisor
Bookkeepers	Post Office Clerks
Business Machine Operators, Offices	Route Managers (Salesmen)
Claims Examiners	Sales Clerks
Clerical or Stenographic	Shipping Clerks
Conductors, R. R.	Supervisors, Utilities, Factories
Employment Interviewers	Toll Station Supervisors
	Warehouse Clerks

b. Technicians

Camp Counselors	Operators, P.B.X.
Dental Technicians	Proofreaders
Draftsmen	Safety Supervisors
Driving Teachers	Supervisors of Maintenance
Expeditors, Factory	Technical Assistants
Experimental Tester	Telephone Co. Supervisors
Instructors, Telephone Co., Factory	Timekeepers
Inspectors, Weights, Sanitary	Tower Operators, R.R.
Inspectors, R.R., Factory	Truck Dispatchers
Investigators	Window Trimmers (Store)
Laboratory Technicians	
Locomotive Engineers	

c. Owners of Little Businesses

Flower Shop (\$3,000-\$6,000)	Tailor Shop (\$3,000-\$6,000)
Newsstand (\$3,000-\$6,000)	

d. Farmers

Owners(\$10,000-\$20,000)

5. Skilled Manual Employees

Adjusters, Typewriter	Glassblowers
Auto Body Repairers	Glaziers
Bakers	Gunsmiths
Barbers	Guage Makers
Blacksmiths	Hair Stylists
Bookbinders	Heat Treaters
Boilermakers	Horticulturists
Brakemen, R. R.	Lineman, Utility
Brewers	Linoleum Layers (Trained)
Bulldozer Operators	Linotype Operators
Butchers	Lithographers
Cabinet Makers	Locksmiths
Carpenters	Loom Fixers
Casters (Founders)	Lumberjacks
Cement Finishers	Machinists (Trained)
Cheese Makers	Maintenance Foremen
Chefs	Installers, Electrical Applian- ces
Compositors	Masons
Diemakers	Masseurs
Diesel Engine Repair & Maintenance (Trained)	Mechanics (Trained)
Diesel Shovel Operators	Millwrights
Electricians	Moulders (Trained)
Electrotypists	Painters
Engravers	Paperhangers
Exterminators	Patrolmen, R. R.
Fitters, Gas, Steam	Pattern and Model Makers
Firemen, City	Piano Builders
Firemen, R.R.	Piano Tuners
Foremen, Construction, Dairy	Plumbers
Gardeners, Landscape (Trained)	Policemen, City
Printers	Postmen
Radio, T.V., Maintenance	Tailors (Trained)
Repairmen, Home Appliances	Teletype Operators
Riggers	Toolmakers
Rope Splicers	Track Supervisors, R. R.
Sheetmetal Workers (Trained)	Tractor-Trailer Trans.
Shipsmiths	Typographers
Shoe Repairmen (Trained)	Upholsterers (Trained)
Stationary Engineers (Licensed)	Watchmakers
Stewards, Club	Weavers
Switchmen, R. R.	Welders
	Yard Supervisors, R. R.

a. Small Farmers

Owners (Under \$10,000)
Tenants who own farm equipment

6. Machine Operators and Semi-Skilled Employees

Aides, Hospital	Photostat Machine Operators
Apprentices, Electricians, Printers	Practical Nurses
Steam fitters, Toolmakers	Pressers, Clothing
Assembly Line Workers	Pump Operators
Bartenders	Receivers and Checkers
Bingo Tenders	Roofers
Building Superintendents (Cust.)	Set-up Men, Factories
Bus Drivers	Shapers
Checkers	Signalmen, R. R.
Clay Cutters	Solderers, Factory
Coin Machine Fillers	Sprayers, Paint
Cooks, Short Order	Steelworkers (Not Skilled)
Delivery Men	Stranders, Wire Machines
Dressmakers, Machine	Strippers, Rubber Factory
Drill Press Operators	Taxi Drivers
Suplicator Machine Operators	Testers
Elevator Operators	Timers
Enlisted Men, Military Services	Tire Moulders
Filers, Benders, Buffers	Trainmen, R. R.
Foundry Workers	Truck Drivers, General
Garage and Gas Station Assistants	Waiters, Waitresses ("Better Places")
Greenhouse Workers	Weighers
Guards, Doorkeepers, Watchmen	Winders, Machine
Hairdressers	Welders, Spot
Housekeepers	Wiredrawers, Machine
Meat Cutters and Packers	Wine Bottlers
Meter Readers	Wood Workers, Machine
Operators, Factory Machines	Wrappers, Stores and Factories
Oiler, R. R.	
Paper Rolling Machine Operators (Head)	

a. Farmers

Smaller Tenants who own little equipment

7. Unskilled Employees

Amusement Park Workers (Bowling
Alleys, Pool Rooms)
Ash Removers
Attendants, Parking Lots
Cafeteria Workers
Car Cleaners, R. R.
Car Helpers, R. R.
Carriers, Coal
Counter men
Dairy Workers
Deck Hands
Domestics
Farm Helpers
Fishermen (Clam Diggers)
Freight Handlers
Garbage Collectors
Grave Diggers
Hod Carriers
Hog Killers
Hospital Workers, Unspecified
Hostlers, R. R.

Janitors, Sweepers
Laborers, Construction
Laborers, Unspecified
Laundry Workers
Messengers
Platform Men, R. R.
Peddlers
Porters
Roofer's Helpers
Shirt Folders
Shoe Shiners
Shorters, Rag and Salvage
Stagehands
Stevedores
Stock Handlers
Street Cleaners
Unskilled Factory Workers
Truckmen, R. R.
Waitresses--("Hash Houses")
Washers, Cars
Window Cleaners
Woodchoppers

Relief, Public, Private

8. Unemployed (No occupation or retired)

APPENDIX D

Raw Data From Demographic, Bowling Inventory and
Achievement Motivation Questionnaire

Raw Data From Demographic, Bowling Inventory
And Achievement Motivation Questionnaire

Demographic					Bowling Inventory			Success Variable	Achievement Motivation Scales					
Sub- ject	Age	Edu- cation	Occupa- tion	Handed- ness	Type of ap- proach	Type of De- livery	Begin- ning Average	High Game	High Set	Final Aver- age	Lynn's Scale	Affili- ation Motiv- ation	Task Motiv- ation	Satis- fact- ion Score
1	60	2	5	1	4	2	175	257	670	171	6	3	1	6
2	50	1	6	1	3	1	160	244	597	152	7	1	1	1
3	39	5	2	1	5	2	172	256	611	168	5	3	6	5
4	32	3	3	1	5	1	177	258	660	169	6	2	2	3
5	46	2	4	2	5	1	173	269	637	174	4	1	1	1
6	50	3	1	1	4	2	169	276	689	161	6	2	7	5
7	77	1	7	1	4	2	161	259	675	160	4	1	1	1
8	49	4	7	1	5	1	172	254	668	167	7	2	4	8
9	47	7	6	1	4	2	191	289	719	179	8	2	2	8
10	21	3	4	2	4	2	158	265	645	166	6	5	1	5
11	53	2	4	1	3	1	152	279	684	149	5	4	1	4
12	67	6	7	1	5	2	171	280	734	165	8	1	1	1
13	52	2	6	1	5	2	172	269	662	163	4	6	1	7
14	32	2	3	2	4	2	175	256	649	163	8	5	3	9
15	36	2	2	1	4	1	176	277	650	177	6	5	1	8
16	27	3	5	1	4	2	169	248	630	167	7	3	3	3
17	49	1	6	1	4	4	179	279	687	170	6	2	3	3
18	28	2	5	2	4	1	156	256	587	147	6	3	1	2
19	56	2	5	1	5	4	175	268	708	170	6	5	5	5
20	22	4	6	1	5	2	169	300	673	178	4	4	2	1
21	48	2	5	1	4	1	180	280	698	181	5	5	1	1
22	39	1	6	1	4	2	159	279	665	164	6	1	1	1
23	47	2	6	2	3	2	166	214	614	164	7	5	5	3

Demographic					Bowling Inventory			Success Variable			Achievement Motivation Scales			
Sub- ject	Age	Edu- cation	Occu- pation	Handed- ness	Type of ap- proach	Type of De- livery	Begin- ning Average	High Game	High Set	Final Aver- age	Lynn's Scale	Affili- ation Motiv- ation	Task Moti- vation	Satis- fact- ion Score
24	47	4	2	1	4	1	188	279	678	183	8	1	1	8
25	25	2	4	1	4	2	146	257	605	166	7	1	1	2
26	61	2	3	1	3	1	178	277	698	169	6	9	1	5
27	48	1	3	1	4	1	171	264	634	166	7	4	4	7
28	37	3	3	1	4	2	159	258	616	150	6	5	5	2
29	61	4	1	1	4	2	175	268	668	167	7	1	4	1
30	28	3	3	1	4	2	179	269	672	177	7	4	4	7
31	56	3	3	1	5	2	172	288	660	159	7	2	5	6
32	50	7	2	1	5	4	160	255	615	162	6	5	3	1
33	47	5	1	1	4	4	161	258	649	158	6	2	2	7
34	62	1	6	1	3	1	164	279	657	155	6	1	1	9
35	53	1	3	1	3	2	186	290	737	180	8	6	4	7
36	46	2	3	1	5	2	186	276	727	177	4	6	1	5
37	64	1	3	1	4	4	153	259	658	152	5	7	3	5
38	31	2	3	1	5	1	164	258	633	165	6	7	6	5
39	32	1	6	1	4	1	181	267	657	177	5	5	5	1
40	31	3	4	1	4	1	147	252	592	148	6	2	5	5
41	31	3	3	1	3	1	185	299	717	177	3	4	4	8
42	31	1	4	1	4	1	161	254	624	167	6	6	1	7
43	24	4	6	1	4	4	165	237	598	170	6	1	1	9
44	30	4	3	1	4	2	167	254	605	159	7	3	3	6
45	27	3	4	1	7	2	175	279	711	153	7	1	4	9
46	40	5	2	1	4	2	166	256	610	163	6	4	4	4
47	38	4	3	1	3	2	174	257	668	171	4	1	1	8
48	53	5	1	1	4	2	161	267	620	161	7	1	1	5
49	37	3	5	1	3	2	165	255	582	169	6	4	1	4
50	28	5	2	1	5	2	181	290	680	180	7	5	4	9
51	45	3	6	1	4	2	176	279	675	173	7	2	2	2

Demographic					Bowling Inventory			Success Variable			Achievement Motivation Scales			
Sub- ject	Age	Edu- cation	Occu- pation	Handed- ness	Type of ap- proach	Type of De- livery	Begin- ning Average	High Game	High Set	Final Aver- age	Lynn's Scale	Affili- ation Motiv- ation	Task Moti- vation	Satis- fact- ion Score
52	61	3	3	1	3	3	167	279	656	160	7	2	2	6
53	22	4	3	1	4	1	160	248	653	166	7	7	2	2
54	51	2	3	1	4	1	168	268	653	168	8	5	5	3
55	35	1	6	1	5	1	174	255	650	174	6	4	3	1
56	41	3	6	1	4	1	174	235	637	165	7	9	6	8
57	29	1	3	1	4	1	159	234	579	164	4	5	5	5
58	57	3	6	2	5	2	163	258	671	161	5	4	4	3
59	40	1	5	1	4	1	181	278	679	177	5	1	1	1
60	42	1	5	1	4	3	174	256	660	168	7	5	5	5
61	47	4	3	1	5	4	178	299	670	169	6	1	1	2
62	43	2	3	2	4	4	152	256	621	159	6	4	6	1
63	48	2	6	1	5	1	162	255	656	164	7	3	1	1
64	43	2	5	1	4	2	160	279	679	160	6	2	3	3
65	49	2	6	1	3	4	174	255	635	168	6	3	4	3
66	29	3	6	1	4	1	163	276	648	167	6	5	1	4
67	29	3	3	1	4	2	165	234	621	158	7	4	3	8
68	27	2	3	1	4	2	163	257	657	173	5	4	3	9
69	25	2	2	1	3	1	164	266	622	169	5	6	1	1
70	32	2	5	1	4	1	177	269	656	177	3	5	1	9
71	32	2	5	1	4	2	189	296	721	189	5	5	2	9
72	32	3	4	1	3	1	165	242	598	163	6	1	3	2
73	27	4	0	1	4	1	173	280	735	175	6	7	1	7
74	21	4	3	1	4	2	175	279	781	180	5	3	1	8
75	52	2	7	2	3	3	151	248	599	149	7	4	5	3
76	43	5	3	1	4	1	163	246	628	175	7	3	5	1
77	33	2	2	1	3	1	193	289	729	197	7	5	1	1
78	28	5	6	1	5	2	181	290	680	180	7	5	4	9

Demographic					Bowling Inventory			Success Variable			Achievement Motivation Scales			
Sub- ject	Age	Edu- cation	Occu- pation	Handed- ness	Type of ap- proach	Type of De- livery	Begin- ning Average	High Game	High Set	Final Aver- age	Lynn's Scale	Affili- ation Motiv- ation	Task Moti- vation	Satis- fact- ion Score
79	37	4	5	1	5	2	169	243	654	172	4	8	1	7
80	37	3	4	1	3	1	146	254	578	146	8			
81	33	5	5	1	5	4	159	227	580	162	5	4	2	9
82	47	4	2	1	4	1	188	277	677	183	8	1	1	7
83	55	3	7	1	4	1	147	249	558	140	8	5	6	8
84	34	5	2	1	3	4	133	246	0	144	6	3	1	8
85	36	3	7	1	3	1	167	253	652	174	6	3	1	9
86	33	2	5	1	4	4	140	253	499	162	4	4	6	1
87	31	3	6	1	4	4	151	223	599	167	4	1	1	4
87	31	3	6	1	4	4	151	223	599	167	4	1	1	4
88	30	2	6	1	3	1	165	253	619	164	4	9	9	1
89	37	2	6	1	3	4	170	238	612	170	3	1	1	3
90	43	1	6	1	3	3	172	252	624	173	5	1	1	1
91	36	2	5	1	4	1	159	243	618	156	6	2	1	1
92	29	3	5	1	4	2	158	235	571	150	6	4	1	8
93	37	3	5	1	3	2	165	255	582	162	5	4	1	8
94	23	2	5	1	3	1	156	259	625	163	5	5	1	3
95	25	2	6	1	4	2	154	234	611	160	5	9	1	3
96	43	3	6	1	5	3	168	267	627	167	5	2	2	7
97	47	5	3	1	4	4	145	218	510	150	5	3	1	6
98	22	2	7	1	4	4	157	231	559	154	5	5	1	7
99	49	3	6	2	4	2	176	247	654	171	7	3	1	3
100	52	1	6	1	4	1	176	265	665	177	6	1	1	1
101	45	2	6	1	5	1	170	258	631	185	4	4	1	3
102	40	5	2	1	4	2	166	256	610	163	6	4	4	4
103	38	5	2	1	4	1	164	243	606	155	6	1	3	5
104	42	1	7	1	4	1	168	247	680	176	7	1	1	5
105	44	2	6	2	3	2	162	256	602	164	5	4	4	3
106	40	1	6	1	1	4	161	246	621	165	6	5	1	9