

AN INVESTIGATION OF COMPETITION IN CHILDREN

by

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CHAPTER I

INTRODUCTION AND REVIEW OF LITERATURE

Competitive behavior in children has been of interest to psychologists and educators for many years. Unfortunately, this area of study has been the object of little empirical investigation. Since the urge to compete is not innate but learned, psychologists have demonstrated an interest in the etiological factors associated with competitive behavior. Does the child learn to be competitive by modelling the competitive behavior of his parents? Does he learn competition by having to vie with his brothers and sisters for the attention and affection of his parents? Or does he gradually acquire an urge to compete by incorporating his parents' admonitions to be the best in his endeavors? Although these are not the specific questions under investigation in this study, they do point to the need for a general understanding of the etiology of competitive behavior.

Within the American society, the subject of competitive behavior assumes an important position. The culture is based on the Puritan Ethic, part of which demands that the individual succeed in whatever he attempts and that competition is healthy and enriching. Therefore, in this society there is the somewhat unique situation of competitive behavior within the primary unit and in other situations such as school, church, gangs, and groups.

Developmental change, physical and psychological, characterizes the growing child. Competitive behavior, while not observable at an extremely early age, has been identified as a specific trait as early as age four (Owens, 1969). With maturation, a definite change in competitive behavior has been found (Owens, 1969). Further, patterns of competitive behavior in socioeconomic and ethnic groups have been reported (McKee & Leader, 1955). Several authorities (Owens, 1969; Madsen, 1967; Shapiro, 1969) have investigated the relationship between early behavior patterns and the influence these patterns have on the adult.

A review of the literature on competitive behavior indicated the following: first, there is a paucity of studies, and second, serious methodological and design problems in this area have been noted. As Owens (1969) pointed out, there is a lack of clear and consistent results on the nature of competitiveness. Further, techniques of standardization and methods of measurement have been lacking. Thus, generalizing across studies is not only extremely difficult but at best tenuous.

In addition, the experimental tasks used in investigating competitive behavior have presented psychologists with a challenge in determining appropriate age related tasks which are interesting and challenging. Tasks involving physical endurance obviously are biased positively toward older male children; when the selected task

involves verbal skills, older children perform at a higher level. When tasks involve high manipulative sophistication, children who have a familiarity with similar toys or games have an advantage. The astute researcher should be aware of the variables associated with and/or influencing competitiveness.

One of the first studies of competitive behavior, Triplett (1897), investigated the effects of competition on performance. He conducted two studies. The first measured the effect of bicycle races under four conditions: alone, racing against time, racing against time but following a pacer who was not a competitor, and competing against other riders. The riders who were competing against other riders averaged 5.15 seconds per mile faster than when racing against time alone. The second study compared the competitive performance of 40 boys and girls of all ages. The apparatus consisted of two fishing reels mounted side by side so that each subject could compete in a together situation. The rate of turning was the dependent variable. There were six test trials for practice: first the subject was asked to perform alone, and then in competition with another subject. The results indicated that (1) 20 of the 40 subjects increased their performance in the competitive trial, and (2) girls competed more than boys.

Molde (1914) studied the effects of competition on speed of tapping and strength of grip. Seventeen boys

between the ages of 12 and 14 served as subjects under three conditions: (1) alone, (2) competition with a rival, and (3) team competition with a rival group. The findings indicated that under the conditions of competitive stimulation, the slower tappers tapped faster and were stimulated by both the rivals' faster tapping and by the instruction to beat the partner.

Hurlock (1927) studied competition in 155 fourth and sixth grade school children. The task presented to the children was an arithmetic test, and the subjects were told on the first day to do as well as possible. On the second day the children were divided into two equal groups: rivalry and nonrivalry. The rivalry group were told that they were trying to beat another group. The nonrivalry group were told to do their best. On the first day, the performance of the groups was equal. However, on the following days, the rivalry group out-performed the nonrivalry group. Hurlock's results showed that (1) the younger subjects did better than the older subjects, (2) girls performed slightly higher than boys, and (3) the performance increment of the initially slower subjects was larger than the initially fast subjects.

Greenberg (1932) investigated the competitive performance of 65 lower class Viennese children, ranging from age 2 to 11 years. The competitive task presented to the

children was in the form of who can build the prettier tower of blocks. The children were asked to enter the experimental room and requested to build something with the blocks. Then, the experimenter asked the children to tell him which constructions were the prettiest. Then, the blocks were placed on a table, and the experimenter said, "I would like to see who can build prettier blocks this time [p. 224]." He encouraged the children to begin as soon as possible. The level of competition was measured subjectively by the experimenter's observations. Greenberg concluded that (1) competition increased as a function of age, the older children performing at a higher competitive level; and (2) that competition first manifests itself in children between the ages of 4 and 5 years.

Demonstration studies conducted at the University of Oklahoma by Hill, Gatch, Mahoney, Ray, and Jacobs (1953) found no significant difference in competitive behavior between children of high and low socioeconomic class at 4 or 5 years of age. However, at 6 1/2 years of age children from high socioeconomic levels demonstrated significantly more competitiveness than did children of low socioeconomic class.

McKee and Leader (1955) investigated the relationship of socioeconomic status and aggression to the competitive behavior of preschool children. The investigators hypothesized that children from a low socioeconomic level would

demonstrate competitive behavior at an earlier age and to a far greater extent than children from a high socioeconomic level.

The subjects, 112 3- and 4-year-old children, were equally divided by age, sex, and socioeconomic levels. To measure competitive behavior, during the first session, each child was taken into the play room. The experimenter, after being in the room with the child for 2 minutes, left the room leaving the child to play alone for a 6 minute time period. A few days later, the same procedure was used; however, another child was present during the play period. The children's overt behavior and expressed verbalizations were recorded. The level of competitive behavior demonstrated was judged from the written protocols of two independent judges, using a 4-point scale to rate the children's behavior. The reported inter-judge reliability was +.71. The findings indicated that (1) lower class children competed more than middle class children; (2) boys competed more than girls; and (3) the older group competed at a higher rate, when compared with the younger group.

Owens (1969) studied the effects of competition in children as a function of age, sex, race, and socioeconomic level. The 180 children used in the study were equally divided into 16 groups by race, sex, age, and socioeconomic class. The apparatus used was a marble dropping machine;

there were 10 trials in which the number of marbles dropped by each child during the trial was the measure of performance. The fifth trial was used as the child's base rate, and this was compared with his performance on Trials 6, 7, and 8. The ninth trial was an alone condition used to measure the effect following competitive stimulation. In the tenth trial, the subject competed against the experimenter.

Owens' results indicated that (1) Competition increased the rate of marble dropping; (2) Competitive behavior in children increased as a function of age in children from 2 to 8 years; (3) Girls competed more than boys; (4) Middle class children performed at a higher rate than lower class children; (5) Racial differences in competitive behavior were not significant; (6) Competition was greater when the machine was set to perform at a high rate of speed; (7) There is an interaction between age and socioeconomic class. Increased age was associated with increased competition in middle class children and decreased competition in lower class children; (8) There was an interaction between race and socioeconomic class which indicated that lower class whites competed more than lower class blacks; (9) A race X age interaction revealed that competition increased with age in white children but tended to decrease with age in black children; (10) A race X sex X socioeconomic class

interaction indicated that increased competition was positively associated with higher socioeconomic class in all children except white girls; (11) A race X age X sex interaction indicated that the black children's competitive behavior decreased as a function of age. Age had little effect on the competitiveness of white and black girls; and (12) A sex X age X socioeconomic class X race interaction showed that competitiveness decreased with age in all lower class children except lower class white boys. Competitiveness increased in lower class white boys and all middle class children as a function of age.

The development of cooperation and competition in children from ages 5 to 10 years was reported by Nelson (1970). The experiment was designed so that a comparison could be made between the cooperative and competitive interaction of 5-year-olds with that of older children up to age 10. The children were presented with three game situations. In one game, it was necessary for the children to mutually assist each other for a successful outcome, and in the other game, conflict and competitiveness were stressed for a successful outcome. In the third, cues for competitive and cooperative effort were present for a successful outcome. The results indicated that (1) When the situation was characterized by cues for cooperative effort and an absence of cues for competition, children

in all the age groups were cooperative; (2) When the situation was characterized by competitive cues and in the absence of cues for cooperation, the older children were more competitive than the 5-year-olds; (3) When the cues for both competition and cooperation were present, the competitive type of interaction was most prominent. The results supported the hypothesis that cues for cooperation and competitiveness increase with age and that for older children competition was more important than cooperation as a determinant of behavior in a mixed cue situation. There were no significant sex differences, but there was a trend that older boys were more competitive than older girls.

In addition to psychologists, cultural anthropologists, and sociologists have also demonstrated an interest in competitive behavior in various cultures and subcultures. The cultural investigations have indicated that competitive behavior in children varies from culture to culture. Klineberg (1940) found that Hopi Indian children refused to compete with each other when confronted with a competitive task. The children, when placed in a competitive situation, performed at a slower rate in order to avoid getting ahead of the other children.

In a further study of the Hopi Indian culture, Goldfrank (1945) concluded that children were encouraged to

cooperate rather than compete. Goldfrank reported that in the Hopi culture farming was the dominant activity and group cooperation was emphasized in order to achieve success. Therefore, children were discouraged from competing against each other.

Madsen (1967) investigated several subcultures within the Mexican culture. Children were categorized into either urban or rural, middle or lower class. Madsen studied the mores of each culture by observing the behavior of the children at play, at work, and in school. The children reared in the urban lower class setting tended to avoid direct conflict between members of their group; whereas, in the urban middle class, conflict was encouraged and the children appeared to enjoy conflict. The middle class child also employed verbal persuasion to a far greater extent than the lower class child. Children reared in the rural milieu looked upon cooperation in a more favorable light than competition. When competitiveness within this subculture was expressed by the child the other members of the group attempted to suppress this behavior by criticism and ridicule.

Furthermore, for the lower class child, the expectation was to work in a cooperative effort within the family in order to provide food and the necessities of life. Working in cooperation with other family members served a

useful purpose and competition threatened family life. Madsen reported that compliance and group cooperation was stressed in the low socioeconomic schools, whereas competitiveness was stressed in the middle class schools.

Madsen concluded that the competitive behavior demonstrated by children was a product of the socioeconomic conditions and the value system of the family, and that the influence of the school environment in shaping the competitive behavior of the child was found to be significant.

The effect of the Kibbutz life in Israel on the competitive behavior in children was discussed by Shapiro (1969). Children raised in a Kibbutz were compared with middle class children living outside the Kibbutz. The children reared in the Kibbutz were positively reinforced for their cooperative behavior and competition was discouraged. Cooperation was emphasized at work, at play, and in school. The atmosphere at home for the middle class child was described as promoting both cooperation and competition.

Shapiro's cross sectional study revealed that not only were the young Kibbutz children less competitive, but the older Kibbutz children were less competitive after they matured. The competitive and cooperative behaviors remained relatively stable for middle class children living outside the Kibbutz.

Although the cultural studies did not employ rigorous controls, they do highlight, from a naturalistic or observational viewpoint, the effect of the primary and secondary units on the inculcation of a competitive or noncompetitive attitude as reflected in the observed behavior.

Black Studies

Studies investigating the effects of competitive behavior in other racial groups have also been reported. Recent demonstrations and political social reformations, as well as unrest among many minority groups, but especially among blacks, has focused interest into the nature of competitiveness.

One of the most comprehensive studies of black people was conducted by Karon (1958). Karon, in his pioneer study, reported that the black adult had an intense self-depreciating attitude which discouraged active participation in physical competitive activities. A representative sample of 1,896 black individuals, aged 10 to 70 years, from a variety of states was tested. The instrument used was the Tomkins-Horn Picture Arrangement Test. This test measures the following areas: (1) aggression, (2) use of denial, (3) emotionality, (4) attitudes toward work, and (4) interpersonal relationships. Karon reported that blacks used denial and withdrawal from physical contact as

main defenses against the expression of aggressive impulses. Children in the sample manifested similar attitudes and defenses toward their relationships with peers. The adults tended to be extremely cautious, fearful toward others, and exhibited subordinate type behavior.

Likewise, Kardiner and Oversey (1951) in examining black Rorschach protocols, found that they viewed the environment as dangerous and hostile. The blacks viewed themselves as being inferior and harboring resentment which resulted in an inordinate amount of internal tension. Their distrust for others was marked, and the expression of their pent-up anger about their situation was internalized rather than externalized. Kardiner and Oversey concluded that since most of the blacks' energy was confined to the control of anger, there was little available for the development of intrapsychic and interpersonal skills.

To help further clarify the manner in which blacks view themselves, Clark and Clark (1958) used dolls as a means to measure levels of identification among black children. Black children were classified on the basis of geographic location, skin color, and age. Four identical dolls, two white and two black, were presented to the children; the children were asked to make eight choices. The design was as follows: (1) The first four choices indicated racial preference; (2) The following three

requests represented knowledge of racial differences; and
(3) The remaining choice revealed self-identification.

The results indicated that overall the children had an understanding of the concept of racial difference; the darker colored skinned children were more accurate in racial differentiation. In terms of identification, 36% of the subjects identified with the black doll; the majority identified with the white doll and rejected the black doll. The preference of the white doll over the black doll existed at each age level. The younger black children, ages 3 to 4 years, had a higher preference for the white doll; however, there was only a gradual decrease in preference at the older age levels. Black children are aware at an early age of their difference from white children. Their preference for the white doll may indicate some negative feelings about themselves and their race.

In a similar study, Katz and Benjamin (1960) reported that blacks, on a task that required group support, rated whites as being more competent. The blacks' level of self-confidence was low when compared with the whites' behavior in a group. Furthermore, the blacks in a choice situation preferred the opinions of the whites more than the opinions of their own group. The investigators concluded that the black child viewed himself as being an inferior person whose chance of success was minimal.

The review of the literature on competitive behavior suggests that performance increases as a function of increased degree of ego-involvement in the task. Further, speed of performance increases when a child is competing with a peer as compared to when he is competing alone. Competitive behavior also increases as a function of increasing age. Sex and socioeconomic class also have been found to be important variables in determining the level of competitive behavior in children. Specifically, girls were found to be more competitive than boys. It also has been reported that middle class children are more competitive than lower class children. Significant interactions between race, sex, socioeconomic class, and age also have been reported by Owens (1969).

The cultural studies helped clarify the effects of the milieu on competitive behavior. Whatever is fostered in the home in terms of modelling, as well as the reinforced patterns of behavior within the school setting and leisure time activities, all contribute to the nature of the competitive behavior exhibited by the child.

Need Achievement

A personality test which may have some unique application in understanding the role of competitive behavior in the child is need achievement. However, this measure has known only limited application as a research tool, being

confined mainly to comparisons with academic achievement and parental attitudes and expectations. The relationship between competition and need achievement is a logical extension to competitive behavior and is therefore useful in further understanding competitive behavior in the developing child.

McClelland (1960) developed the term need achievement to describe an hypothetical construct used to explain empirical relationships of learning as a result of experiences of success and failure. He states:

The construct is a function of similar ego-involving experiences. In other words, it assumes the person carries around with him a characteristic amount of need achievement as a result of his past learning in connection with similar experiences of ego-involvement, failure, success, etc. To put it another way, a person, as a result of learning, develops need achievement in proportion to the number and nature of ego-involving experiences which can be experimentally induced.

Atkinson (1958), in defining need achievement, stated that:

Need achievement is simply a TAT score derived in a particular way, no more, no less. If we want to relate some other response to need achievement, we simply relate it to the TAT score, which is what defines need achievement.

Three types of determinants of need achievement were described by McClelland, Atkinson, Clark, and Lowell (1953):

(1) cues in the every day environment and cues in the relatively autonomous thought processes of the individual,

(2) specific experimentally introduced cues, and (3) controllable cues in a particular picture.

Veroff (1965), in describing the characteristics of need achievement motivated behavior, stated:

A particular goal-directed act can be represented by a resultant of forces to approach or to avoid the goal, and that these forces are a function of the individual's personal disposition to find gratification for that goal (motive), his expectation that he can successfully attain it in the situation (expectancy), and how much gratification is offered in the situation (incentive). In the case of achievement motivation, the gratification is assumed to come from competing standards of excellence.

Further, Atkinson (1958) pointed out that an individual's personal disposition including expectancies for success and failure, largely determine his performance. The expectancy of success or gratification influences his need achievement level.

Winterbottom's (1953) study of the relation of childhood training in independence to achievement motivation found that early reward training in independence and mastery contributed to the development of strong achievement motivation. A questionnaire given to each mother in the study was designed to measure the number of demands and restrictions made in training and the age at which they were imposed along with the rewards and punishments given in the training. The measure to obtain achievement motivation in each child was obtained from imaginative stories

which each child produced. The achievement related behavior was obtained from teachers' ratings of the behavior of each child in achievement situations and observations on a puzzle test of persistence, memory for positive or negative instructions, level of aspiration, and preference for a difficult task.

Winterbottom discovered that the mothers of high achievement motivated children (1) made more demands before the age of eight, (2) gave more frequent rewards for fulfilled demands, (3) enforced more restrictions until the age of seven, and (4) rewarded more for conformity to restrictions than punishing for nonconformity.

Winterbottom concluded that early rewarding and training in independence and mastery, accompanied by few restrictions given after mastery had been attained, contributed to the development of strong achievement motivation. Children who demonstrated a high motivation to achieve, manifested independence, persistence, popularity, and success in school.

Douvan and Adelson (1958) contrasted middle and lower class high school students in achievement motivation exhibited in two success/failure situations, differing in the reward potential. An abstract reward of verbal praise was given in one condition, while the second condition consisted of giving subjects a valued material reward. The performance level of the lower class group dropped significantly when the material reward was absent, whereas a

high level of motivation was maintained by the middle class subjects. The investigators summarized their findings as follows: (1) Middle class parents, in rearing their children, assert demands for success much earlier in their development than the lower or working class parents; (2) Achievement striving is a central motivational factor in middle class children; (3) The urge to achieve success is not emphasized as much in the working class home as in the middle class home; (4) The pattern of achievement motivation depends on the child's social class and also on the parental expectation representing a particular subculture.

Rosen and D'Andrade (1959) investigated the relationship between the behavior of parents of boys with high need achievement and the parents whose sons demonstrated low need achievement. The study tested two hypotheses: (1) Achievement motivation is a result of achievement training, independence training, and rewards and punishments employed by parents; (2) Differences in the mean level of achievement motivation between social classes is a function of differential class emphasis upon independence and achievement training. (The middle class parents were hypothesized to stress self-reliance, autonomy, and achievement in problem solving situations.)

A family group comprised the father, mother, and a son age 9, 10, or 11. The 40 families consisted of 120 subjects. The 40 boys selected were matched by age, race,

IQ, and social class. The boys were white, native born, and between the age of 9 and 11. Each of the boys were administered the Thematic Apperception Test and the protocols were rated according to a method developed by McClelland and his associates. The stories were scored by two judges and the investigators reported a Pearsonian coefficient of correlation of .87 between scorers. The boys were then divided into two groups, high need achievers and low need achievers.

The experimenters then devised a task to measure parents' responses to their son's participation in achievement behavior. The task devised was a problem solving situation which involved the parents in their son's task performance. The tasks were constructed so that the subjects were often faced with a choice of giving or refusing help. The parents' behavior as their son engaged in the experimental tasks was observed. A category system was used to measure the interaction between the parents and sons. The experimental tasks were constructed so that in one of the tasks the boy was dependent on his parents for aid and in the other task, the parents knew the solution to the problem and were in a position to do the task better than their son. The tasks included were block stacking, anagrams, patterns, ring tossing, and a hatrack game. The measures of achievement were obtained from

estimates and choices made on three of the tasks, block stacking, patterns, and ring tossing. The parents' estimate of how well their son did on the block stacking task was considered as the measure of aspiration for their son. The anagrams task served as a measure of independence training; the longer the parents delayed in assisting the child, the higher the independence score. In the ring tossing experiment, parents were asked to place their sons at some distance from the peg; the high need achievers were less successful in placing rings around the peg than were the low need achievers.

The experimenters concluded that the parents of high need achievement boys tended to place their sons further from the peg and consequently the number of their successes was smaller. Further, the mothers of the high need achievement boys reinforced their sons more positively than the low need achievement boys' mothers. The difference between the fathers was not significant, although the results were in the predicted direction: more positive reinforcement elicited from high need achievement fathers than from the low need achievement fathers.

Rosen and D'Andrade concluded that parents of high need achievement boys were more involved in their children's problem solving experiments, and they appeared to be more interested. The parental standards of excellence for the

high need achievers were high and they expected their children to achieve at a higher than average level. The approving behavior was provided when their children did well and performed to the expectation level. The fathers of the boys who were high need achievers encouraged their sons to complete the tasks by themselves. The concern for success was far greater in mothers whose boys were high achievers.

Callard (1964), investigating the achievement motive in 4-year-old children and its relationship to achievement expectancies of the mothers, found that the need achievement of 4-year-old children from upper and lower socioeconomic levels was positively and significantly correlated with the expectations of their mothers. The subjects were 80 4-year-old boys and girls and their mothers. The achievement level was measured by performance on tasks involving the tendency to resume challenging tasks in preference to nonchallenging tasks and the tendency to persist at a difficult task which was originally perceived as easy. The results of the investigation supported the hypotheses that the achievement motive of the child was correlated positively with the expectations of his mother, and that this relationship operated independently of the mental ability of the child.

The interrelationships between variables concerning achievement motivation and academic achievement was

investigated by Haddad (1965). The population consisted of 59 sixth grade boys and their parents. The students, between 11 and 12 years of age, came from the same school district. The McClelland test of need achievement was used to assess achievement motivation of both parent and child. A parental questionnaire and rating scale was devised to collect data concerning the expectations of fathers and mothers for their children. The results indicated that (1) Achievement motivation, as measured by the McClelland scale, was not related to academic achievement in 11- and 12-year-old boys; (2) No relationship existed between the need achievement of the parents and that of the children; and (3) Significant differences existed between the child's academic position in school and the academic position projected by his parents.

Winterbottom (1953) found a positive relationship between the need achievement level of boys at age 8 through 10, and their mothers' attitudes toward independent accomplishment. Feld (1967) retested the same subjects six years later. The 29 boys were administered the need achievement test used by Winterbottom and the 29 mothers took an Adolescent Maternal Practices Check List designed to measure achievement and independence dimensions. Comparisons were made between the childhood need achievement,

independence training scores and the adolescent scores across the same variables. The results indicated that there was a positive relationship between the need achievement scores of the children from age 8 to 14 years and age 10 through 16 years. The maternal attitudes toward independence training were not consistent over time. Parents who emphasized independence earlier in childhood did not stress it during adolescence. However, those parents who did not emphasize independence in early childhood began to stress it during adolescence.

Eklund (1970) investigated competitiveness in boys as related to academic achievement and mothers' achievement orientation. The study utilized a game situation involving competition (Madsen Board) to predict academic achievement in third, fourth, and fifth grade boys. The subjects comprised two groups of 36 white, middle class, 9-, 10-, and 11-year-old boys whose mothers had either high or low achievement motivation. The French Test of Insight was the instrument used to assess the mothers' need achievement level. The measures of academic achievement were the Lorge-Thorndike IQ Scores and Metropolitan Achievement Test which were obtained from school records. Each boy was asked to participate in a two-person game situation, once with a boy whose mother had a similar achievement orientation as his mother and once with a boy whose mother was unlike the subject's mother.

There were no significant differences in the degree of competitiveness as a function of mother's level of achievement orientation. The boys were less competitive during the second trial. A significant positive relationship was found between competitiveness and academic achievement.

The need achievement studies indicated that parental expectations, socioeconomic class, mastery of independence training, and early exposure to success contribute to a high achievement level. The middle class child has a significant advantage over the lower class child since in his early years the emphasis is on success, self-accomplishment, and living up to parental expectations. For the lower class child, the early family relationships are markedly different. The parental demands to be independent and successful apparently are not stressed to the same degree that they are stressed to the middle class child. Further, rewards for success are not as pronounced for the lower class child as they are for the middle class child.

CHAPTER II

STATEMENT OF HYPOTHESES

The research on competitive behavior in children has shown that competition is a function of age, race, sex, and socioeconomic class. Identification of these variables have indicated that competition is not a unitary but a multidetermined response. However, only one comprehensive study on competitive behavior has been reported in the lieterature (Owens, 1969). Owens' results suggest the need for further research in this area.

The purpose of the present study was to replicate Owens' study using a different sample. Further, this study investigated the relationship between competitive behavior and need achievement. The general hypothesis of this study is that white children perform at higher levels of competition and demonstrate a higher need for achievement than do black children of comparable age. The relationships that were investigated are indicated by the following hypotheses:

Hypothesis I. A child responds positively to competitive stimulation. This hypothesis predicts an increased rate of response when the child is confronted with a competitive stimulus than when he is working alone.

Hypothesis II. The effect of competition is not a function of age in children. Young children respond the same to competitive stimulation as do older children.

Hypothesis III. There is no significant difference in the competitive behavior between boys and girls.

Hypothesis IV. Children from middle class families compete more than children from lower class families.

Hypothesis V. Black and white children respond differently in a competitive situation.

Hypothesis VI. An interaction between race and socioeconomic class is predicted. Middle class black children are expected to be more competitive than lower class black children, while lower class white children are expected to compete more than middle class white children.

Hypothesis VII. Children show more competitive behavior when competing with a human than with a machine.

Hypothesis VIII. There is a significantly higher degree of competitive behavior demonstrated by the middle class child when competing with a human than when competing with a machine.

Hypothesis IX. White children demonstrate a higher need for achievement than black children.

Hypothesis X. A significant positive relationship exists between need for achievement and competitive behavior in children.

CHAPTER III

PROCEDURE

Competition

Subjects

One-hundred and twelve first and third grade children were used as subjects in this study. The 56 first grade children ranged in age from 6 years to 7 years 3 months with a mean age of 6 years 6 months. The 56 third grade children ranged in age from 8 years to 9 years 2 months with a mean age of 8 years 5 months. The subjects were selected to provide an equal distribution by sex, race, and socio-economic status. All of the children were attending a New York City public school. The lower class children were chosen according to their fathers' occupational standing according to listings by Hollingshead and Redlich (1938) and a total family annual income of \$6,000 or below. These children lived in the borough of Manhattan.

The middle class children were selected from families with incomes between \$10,000 to \$20,000 and their fathers' occupational standing. These children lived in the borough of Queens.

Apparatus for Competition Task

A marble dropping apparatus utilized by Owens (1969) was used as the standard task to measure competitive

behavior. The apparatus was designed to provide a standard task in which the subject's speed of marble dropping could be determined. The apparatus' specifications were as follows: A marble dispenser which consisted of a 21 inch brass tube. The tube was elevated a slight degree to permit the marbles to roll down an inclined plane. It was designed in a manner that permitted the child to pick up one marble at a time. The dispenser is illustrated in Figure 1.

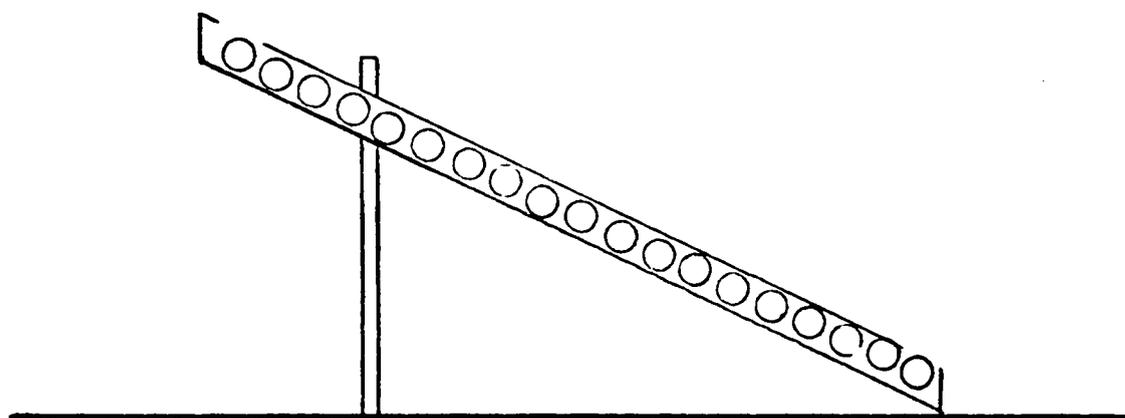


Fig. 1. Illustration of Marble Dispenser

An automatic marble dropping machine, operated by the experimenter, was used as the child's "competitor." It was similar to the marble dispenser; however, the machine had a small control box that was operated electrically which controlled the rate of marbles dropped. The control box could be set in three positions: (1) the child's base rate, (2) 50% faster than the base rate, and (3) 50% slower than

the base rate. The machine was calibrated in terms of marbles dropped per 15 second period of time. Figure 2 illustrates the automatic marble dropping machine.

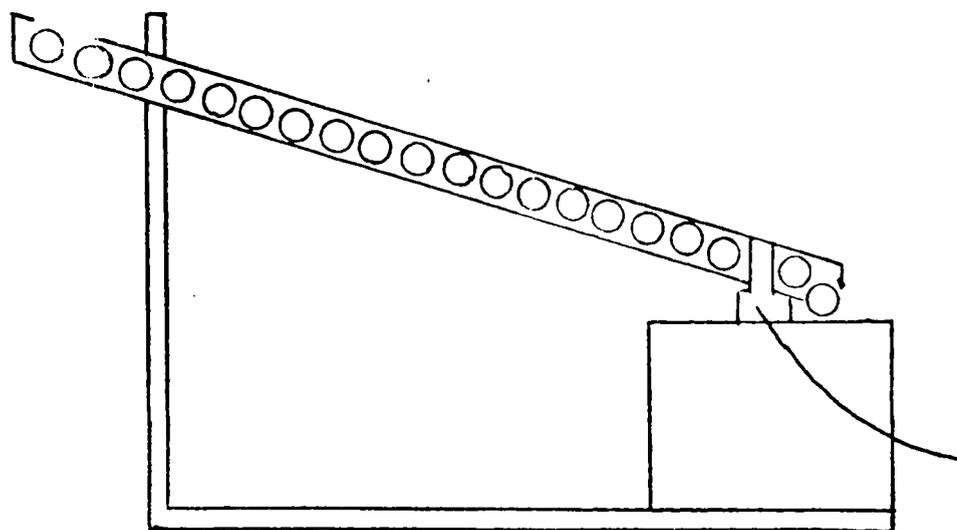


Fig. 2. Illustration of the Automatic Marble Dropping Machine

The child and the experimenter each had a wooden collection box in which they placed their marbles. The boxes were 7 inches high, 7 inches wide, and 5 inches deep. A hole 1 1/2 inches in diameter was cut in the top of the box to permit the marbles to fall through.

Procedure

The procedure utilized in this study was identical to the procedure used by Owens (1969). Each subject was brought into the experimental room designated by their respective schools and seated across the table from the experimenter. The subject was told: "Look at these

marbles. You can drop them one at a time like this." The experimenter dropped three marbles, one at a time into the child's wooden box. The experimenter took the marbles each time from the marble dispenser (Figure 1). The child was then told: "Now I want to see you drop the marbles as fast as you can, one at a time, into the box as I did. Do not pay any attention if you drop the marbles by accident on the floor. Just keep on dropping them in the box as fast as you can. Ready, start." After 15 seconds elapsed, the child was told to stop. The child then repeated the task four times with the instructions: "Now let's see you do it again. Drop them as fast as you can into the box. Ready, start." The number of marbles dropped by the child in the fifth trial was used as his base rate.

After five trials were completed by the child, the automatic marble dropping machine was placed on the table. The arrangement of the marble dropping machine, dispenser, collection box, control box, child, and experimenter is shown by Figure 3.

The child was told: "Look at this machine. Its name is Sam. It drops marbles. Watch Sam." The machine then dropped five marbles. Each time the machine dropped a marble, it made a clicking sound, which could be heard by the child. Prior to the sixth trial the following instructions were given to the child: "We are now going to play

a game. The object of the game is to see who can drop the most marbles in his box. When I say 'Start,' the machine will start dropping marbles and you can too. See who wins. Start." On the sixth trial the machine was set to drop the marbles at the child's base rate (determined by the number of marbles dropped in the box on Trial 5). At the end of 15 seconds, the child was told to stop and the machine was disconnected.

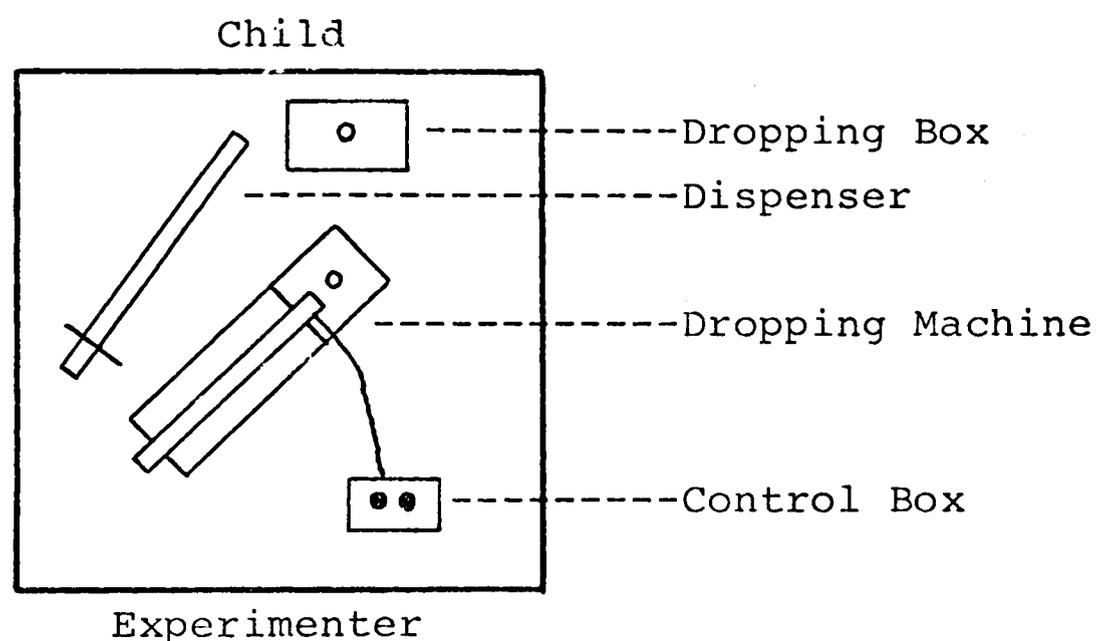


Fig. 3. Illustration of Apparatus Position

The procedure used for the seventh trial was identical with that of the sixth trial except that the machine was set to drop marbles 50% faster than the child's base rate. On the eighth trial, the machine was set 50% slower than the child's base rate with the identical instructions used

in Trials 6 and 7. The child was instructed to drop the marbles as fast as possible.

The machine was removed from the table prior to the ninth trial. The ninth trial was a repetition of the procedure followed in the first five trials. The child was told to drop the marbles as fast as he could into the collection box.

The tenth and final trial was a competitive situation between the child and the experimenter. The child and the experimenter each had their box of marbles and a wooden box. The child was then told: "Now we are going to play another game and see who can drop the most marbles into the box. Ready, go." The experimenter attempted to pace himself using the base rate of the child. At the completion of the tenth trial, the competition task was terminated.

At the end of the task, there was a total of ten trials of 15 seconds each in which the child performed alone six times, in a competitive situation with the machine three times, and in competition with the experimenter one time. The dependent variable was the number of marbles dropped per trial.

A derived competitive score for each child was obtained by subtracting Trial 5 from the mean of Trials 6, 7, and 8. Trial 5 was the trial selected to represent the child's base rate of responding to the marble dropping task.

The child competed against the machine, which was set at the child's base rate, on Trial 6. On Trial 7 the child competed against the machine which was set to drop marbles 50% faster than the base rate. The machine was set to drop marbles 50% slower than the child's base rate on Trial 8.

Statistical Analysis

An analysis of variance was used to investigate the effect of age, race, sex, and socioeconomic class on competitiveness. The dependent variable used in the analysis of variance was the difference score resulting from subtracting Trial 5 from the mean of Trials 6, 7, and 8.

Direct difference t tests were used to determine whether significant differences existed between Trial 5 and Trial 6, between Trial 5 and Trial 7, and between Trial 5 and Trial 8. Similar tests were used to determine whether there were significant differences between Trial 5, base rate, and Trial 9 and between Trial 5 and Trial 10. Trial 9 was a replication of Trial 5 and the direct difference t test was used to determine whether the competitive conditions of Trials 6, 7, and 8 affected the child's performance on Trial 9. The difference between Trial 10, when the child competed with the examiner, and the mean of Trials 6, 7, and 8, competition against a machine, was evaluated by a direct difference t test for each subject.

Need Achievement

Procedure

Lowell (1952, 1953) and Winterbottom (1953, 1958) devised a procedure for measuring the level of need achievement in children. Their procedure consisted of having a child make up a story in response to four standardized situations:

1. A father and son talking about something important.
2. Brothers and sisters playing. One is a little ahead.
3. A young man alone at night.
4. A young man with his head resting on his hands.

In the present study the Winterbottom Achievement Orientation Verbal Cues were group administered (as developed by Maimon, 1972) to all first and third grade children who served as subjects in the competition study.

The instructions to the children were as follows:

"What I have here today is sort of a game. I'm interested in story telling, and I'd like you to tell me some stories. It would be hard to make up stories about just anything and so I'm going to tell you what to make up a story about. I'll give you an idea and you tell me a story about it. Make up a real story with a beginning and an end just like the ones you read. Write on your paper

as neatly and quickly as you can as much about your story as you can think of . . . (Cue) . . . As you finish each of the questions, raise your hand.

After each verbal cue was given, the experimenter wrote the cue on the blackboard which was in the front of the classroom and visible to all subjects. Then, four questions were written on the blackboard to help each child in making up his story. The experimenter told the group, "I am writing four questions on the blackboard which you must answer in making up your stories. I will read the questions aloud as I am writing them down." The four questions were:

1. Tell me what is happening?
2. Tell me what happened before?
3. Tell me what is being thought or wanted?
4. Tell me what will happen? How will it end?

The children were then told, "It is important that you make up a story which answers all of these questions. Do not worry about the spelling of the words, I am only interested in your stories. There are no right or wrong stories, all the stories are right. When your story is over, please turn your paper over and sit quietly in your seat. Thank you. Let's begin The first story is" After the first story was completed by all the subjects, the following instructions were given to the group, "Now, we are

going to tell a second story. Please draw a line under your first story and place the number 2 below the line for the second story. Story 2 is . . . (the experimenter points to the blackboard). What is happening now? Brothers and sisters playing. One is a little ahead." The three questions were presented in an identical manner. This procedure was used for all of the verbal cue stories in the task. All of the children were encouraged to do their best and the experimenter walked around the room and commented aloud, "That's good, you're doing fine."

At the end of the task, the stories were collected by the experimenter who thanked the children for their stories. The stories were scored in accordance with the McClelland and Atkinson (1958) and Smith, Feld, and Atkinson (1968) criteria for need achievement related imagery by certified personnel, designated by Dr. George Litwin (Harvard University) and Miss Laural Lassilax in the Motivation Research Group, Division of Behavior Science Center, Central Plaza, Central Square, Cambridge, Mass. 02139.

Statistical Analysis

An analysis of variance was computed using the total need achievement scores for all the subjects.

A need achievement score for each child was derived by computing the mean of the four stories for each child.

CHAPTER IV

RESULTS

The results are presented in the order in which the hypotheses are stated. The results of the related findings are also presented.

Hypothesis I

This hypothesis predicted that the children's rate of marble dropping would increase as a result of competitive stimulation. A direct difference t test between Trial 5 and the mean of the three competitive trials (6, 7, and 8) for all subjects yielded a t value of 12.28 which is significant at the .001 level ($df = 111$), thus supporting the hypothesis. As seen in Table 1, the overall mean performance on Trial 5 was 11.759, and the mean of Trials 6, 7, and 8 was 13.10. Table 1 presents a summary of the mean number of marbles dropped in each trial.

Hypothesis II

This hypothesis predicted that there is no significant difference in the competitive behavior between younger and older children. The mean difference score for the younger children was 2.12 and the mean difference score for the older children was 1.07. The difference between the age

conditions was significant ($F = 10.164$; $df = 1, 96$; $p < .05$). Hypothesis II was not supported.

TABLE 1
MEAN NUMBER OF MARBLES DROPPED IN EACH TRIAL

	Trial				
	1	2	3	4	5
Mean number of marbles dropped	11.482	11.445	11.446	11.688	11.759
	Trial				
	6	7	8	9	10
Mean number of marbles dropped	12.759	13.259	12.909	13.027	13.446

Hypothesis III

Hypothesis III predicted that there is no difference between the number of marbles dropped between boys and girls. The mean rate for the boys was 1.09, whereas for the girls it was 1.10. An analysis of variance was computed on the data as seen in Table 2. The results, $F = 0.140$; $df = 1, 96$, supported the prediction, with no significant difference.

TABLE 2

ANALYSIS OF VARIANCE SUMMARY TABLE FOR SEX, RACE, AGE, AND
 SOCIOECONOMIC CLASS USING COMPETITION SCORE COMPARING
 NO COMPETITION (TRIAL 5) WITH COMPETITION
 (MEAN OF TRIALS 6, 7, AND 8)

Source	SS	df	MS	F	Level of Significance	Power (.05)
Race (R)	0.0573	1	0.0573	11.074	.01	*
Sex (S)	0.0007	1	0.0007	0.146		
Age (A)	0.0526	1	0.0526	10.154	.01	
Socioeconomic (SE)	0.0057	1	0.0057	1.110		.98
R X S	0.0048	1	0.0048	0.931		.97
R X A	0.0906	1	0.0906	17.513		
S X A	0.0007	1	0.0007	0.147	.001	*
R X S X A	0.0104	1	0.0104	2.018		.99
R X SE	0.0178	1	0.0178	3.449		.99
S X SE	0.0096	1	0.0096	1.857		.99
R X S X SE	0.0011	1	0.0011	0.226		.70
A X SE	0.0042	1	0.0042	0.823		.95
R X A X SE	0.0004	1	0.0004	0.088		.60
S X A X SE	0.0089	1	0.0089	1.720		.99
R X S X A X SE	0.0076	1	0.0076	1.473		.99
Within cell error term	0.4968	96	0.0051			
Total	0.7698					

Hypothesis IV

Hypothesis IV predicted that children from middle class backgrounds compete more than children from lower class backgrounds. There was no significant difference between the competition scores of lower ($\bar{X} = 1.09$) and middle ($\bar{X} = 1.11$) class children as tested by an analysis of variance ($F = 1.110$; $df = 1, 96$). (See Table 2.) Therefore, this hypothesis was not supported by the data.

Hypothesis V

This hypothesis predicted that the competitive conditions would result in a higher rate of marble dropping for white children than for black children. The results support the hypothesis in that an analysis of variance demonstrated that whites ($\bar{X} = 1.13$) showed a significantly greater increase ($F = 11.074$; $df = 1, 96$) in the rate of marble dropping due to competition than did blacks ($\bar{X} = 1.07$). (See Table 2.)

Hypothesis VI

Hypothesis VI predicted an interaction between race and socioeconomic class. Specifically, it was predicted that middle class black children compete more than do lower class black children, whereas the lower class white children compete more than do middle class white children. While the difference was in the predicted direction (see Figure 4)

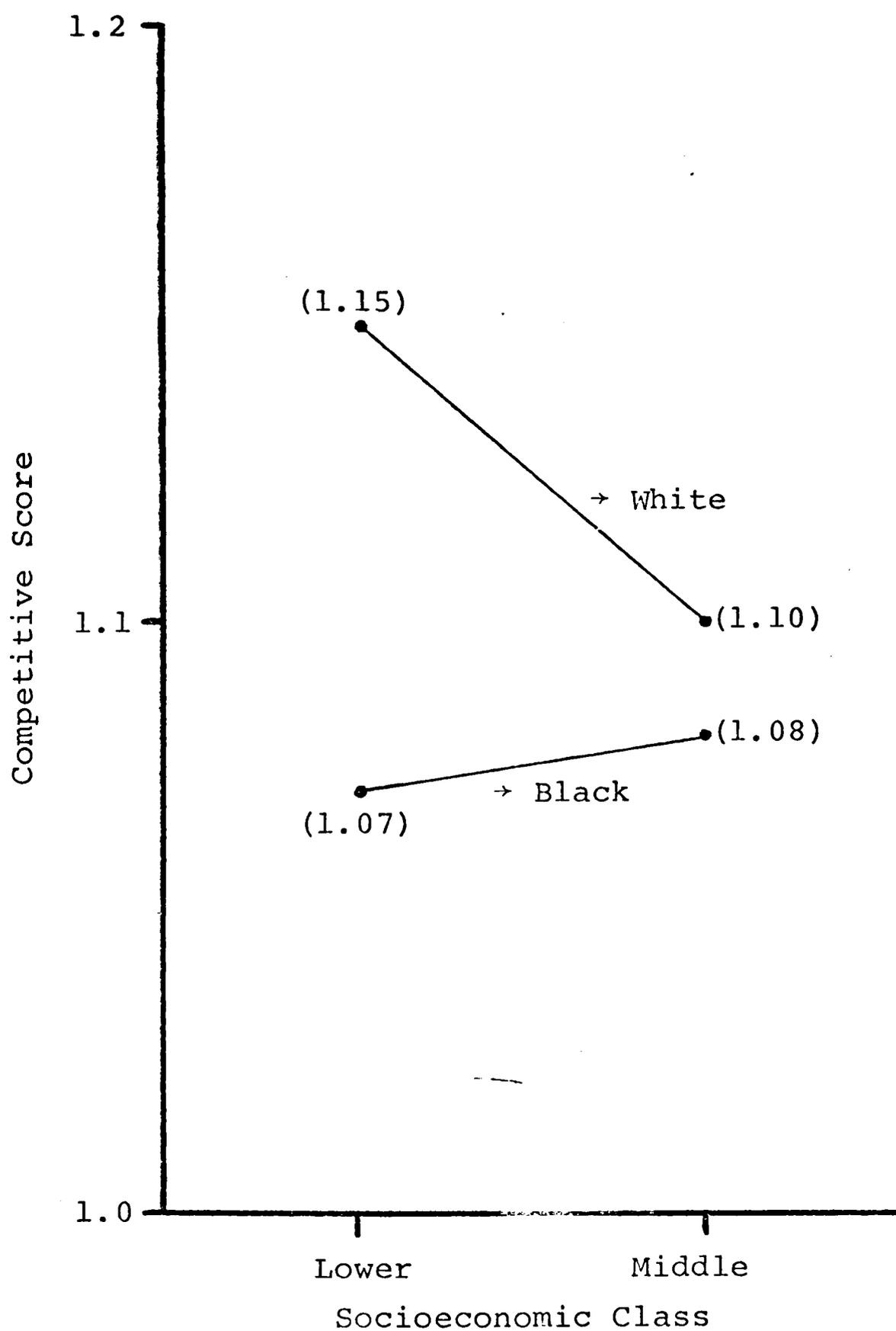


Fig. 4. Race X Socioeconomic Class Interaction using Competition Scores

an analysis of variance test indicated that the interaction was not significant (see Table 2).

Hypothesis VII

This hypothesis predicted that children demonstrate a higher degree of competitiveness when competing with a human than when competing with a machine. The mean score for the subjects on Trials 6, 7, and 8 (the machine trials) was 12.86; the mean for Trial 10 (the human trial) was 13.45. The derived mean difference, obtained by subtracting the mean of Trials 6, 7, and 8 from Trial 10, was .59. A direct difference t test between these means was significant ($t = 2.9971$); $df = 111$; $p < .01$). This increase was found to be significant thus supporting the hypothesis.

Hypothesis VIII

Hypothesis VIII predicted an interaction between socioeconomic class and type of competition, human or machine. As seen in Table 3 socioeconomic class was not significant. The data were further analyzed using a direct difference t test to determine if the human or mechanical type competitor significantly affected the rate of marble dropping in different socioeconomic groups.

TABLE 3

ANALYSIS OF VARIANCE SUMMARY TABLE FOR SEX, AGE, RACE, AND
 SOCIOECONOMIC CLASS USING THE MEAN OF COMPETITION
 TRIALS 6, 7, AND 8 SUBTRACTED FROM THE
 COMPETITION TRIAL 10

Source	SS	df	MS	F	Level of Significance	Power (.05)
• Race (R)	3.8134	1	3.8134	2.748		.99
• Sex (S)	4.8610	1	4.8610	3.503		.99
• Age (A)	6.0357	1	6.0357	4.350	.05	*
• Socioeconomic (SE)	0.0634	1	0.0634	0.046		.99
• R X S	1.0158	1	1.0158	0.732		.99
• R X A	1.0158	1	1.0158	0.732		.99
• R X SE	12.8928	1	12.8928	9.292	.01	.99
• S X A	3.1111	1	3.1111	2.242		.99
• S X SE	1.7500	1	1.7500	1.261		.99
• A X SE	0.1944	1	0.1944	0.140		.99
• R X S X A	0.6706	1	0.6706	0.483		.99
• R X S X SE	0.2539	1	0.2539	0.183		.60
• S X A X SE	6.9999	1	6.9999	5.045	.05	
• R X S X A X SE	0.0357	1	0.0357	0.026		*
Within cell error term	133.2062	96	1.3875			
Total	176.3174	111	1.5884			

Figure 5 depicts the interaction of socioeconomic class and type of competition. There was no significant difference between the scores of middle class children when competing against a human and when competing against a machine. Further, there was no significant difference between lower class children's competitive behavior when performing against a human or against a machine.

Hypothesis IX

Hypothesis IX predicted that white children demonstrate a higher level need achievement than do black children. The group means demonstrate that the white children ($\bar{X} = 3.75$) achieved higher scores than did the black children ($\bar{X} = 1.91$). Table 4 presents the analysis of variance using the total need achievement scores, ($F = 29.013$; $df = 1, 96$; $p < .001$). Hypothesis IX was supported.

Hypothesis X

Hypothesis X predicted that there is a positive relationship between need for achievement and competitiveness in children. A Pearson product moment correlation between the need achievement test scores and the competitiveness score, using the difference score of the mean of Trials 6, 7, and 8 minus Trial 5 yielded a significant correlation of $.26$; $p < .01$; $df = 110$. This hypothesis was confirmed.

TABLE 4

ANALYSIS OF VARIANCE SUMMARY TABLE FOR SEX, AGE, RACE, AND
SOCIOECONOMIC CLASS USING TOTAL NEED ACHIEVEMENT SCORES

Source	SS	df	MS	F	Level of Significance	Power (.05)
Race (R)	94.7232	1	94.7232	29.013	.001	.98
Sex (S)	3.9375	1	3.9375	1.206		.95
Age (A)	27.0089	1	27.0089	8.273	.01	.99
Socioeconomic (SE)	2.5803	1	2.5803	0.790		
R X R	0.0083	1	0.0083	0.003		
R X A	2.0089	1	2.0089	0.615		
R X SE	21.4375	1	21.4375	6.566	.01	
A X SE	27.0089	1	27.0089	8.273	.01	
S X A	3.9375	1	3.9375	1.206		.98
S X SE	1.5089	1	1.5089	0.462		.85
R X S X A	1.5089	1	1.5089	0.462		.85
R X S X SE	6.5089	1	6.5089	1.994		.99
R X A X SE	0.2232	1	0.2232	0.068		*
S X A X SE	0.7232	1	0.7232	0.222		.65
R X S X A X SE	3.2232	1	3.2232	0.987		.97
Within cell error term	313.4284	96	3.2648			
Total	509.7766	111	4.5925			

Related Findings

A significant age main effect ($F = 4.350$; $df = 1, 96$; $p < .05$) was found in the analysis of variance comparing performance on Trial 10 with means of Trials 6, 7, and 8. (See Table 3.) The mean for the older children was 0.47 and the mean for the younger children was 0.01. Competing with a human affected older children more than it did the younger children.

The competition scores were higher for the middle class children than the lower class children when competing against a machine, Trials 6, 7, and 8. The mean for the middle class children was 13.90 whereas for the lower class children, the mean was 11.65 (see Figure 5).

Likewise, in competition with a human, Trial 10, the middle class children performed higher than the lower class children. The mean for the middle class children was 14.16 and for the lower class children the mean was 11.86 (see Figure 5).

A significant race by socioeconomic class interaction was found ($F = 9.292$; $df = 1, 96$; $p < .01$). (See Table 3.) Figure 6 graphically depicts this interaction. The lower class white children responded more positively to human competition, relative to mechanical competition than did the middle class white children. The lower class black children's response to human competition was less than that observed in the middle class black children.

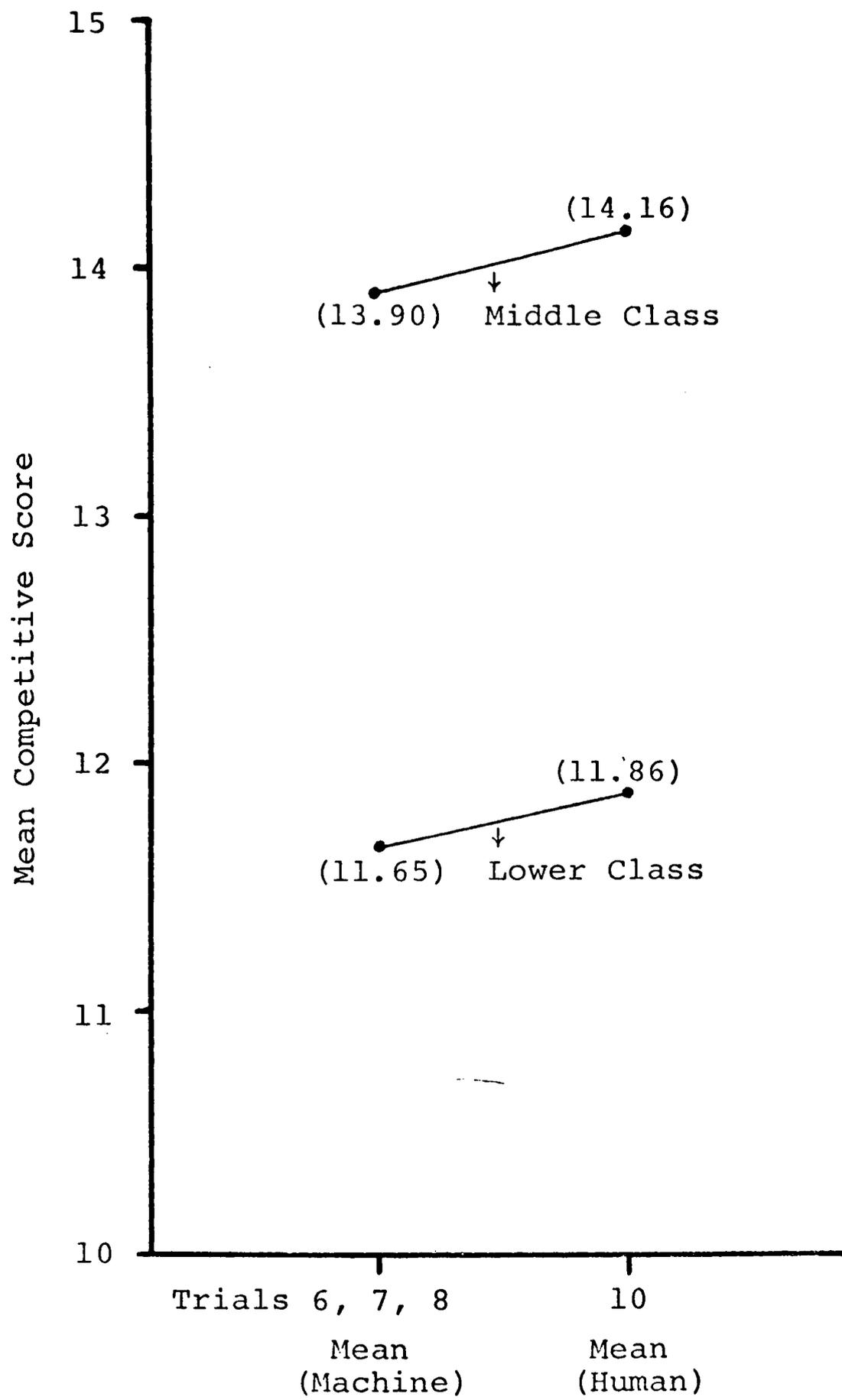


Fig. 5. Socioeconomic Class X Type of Competition

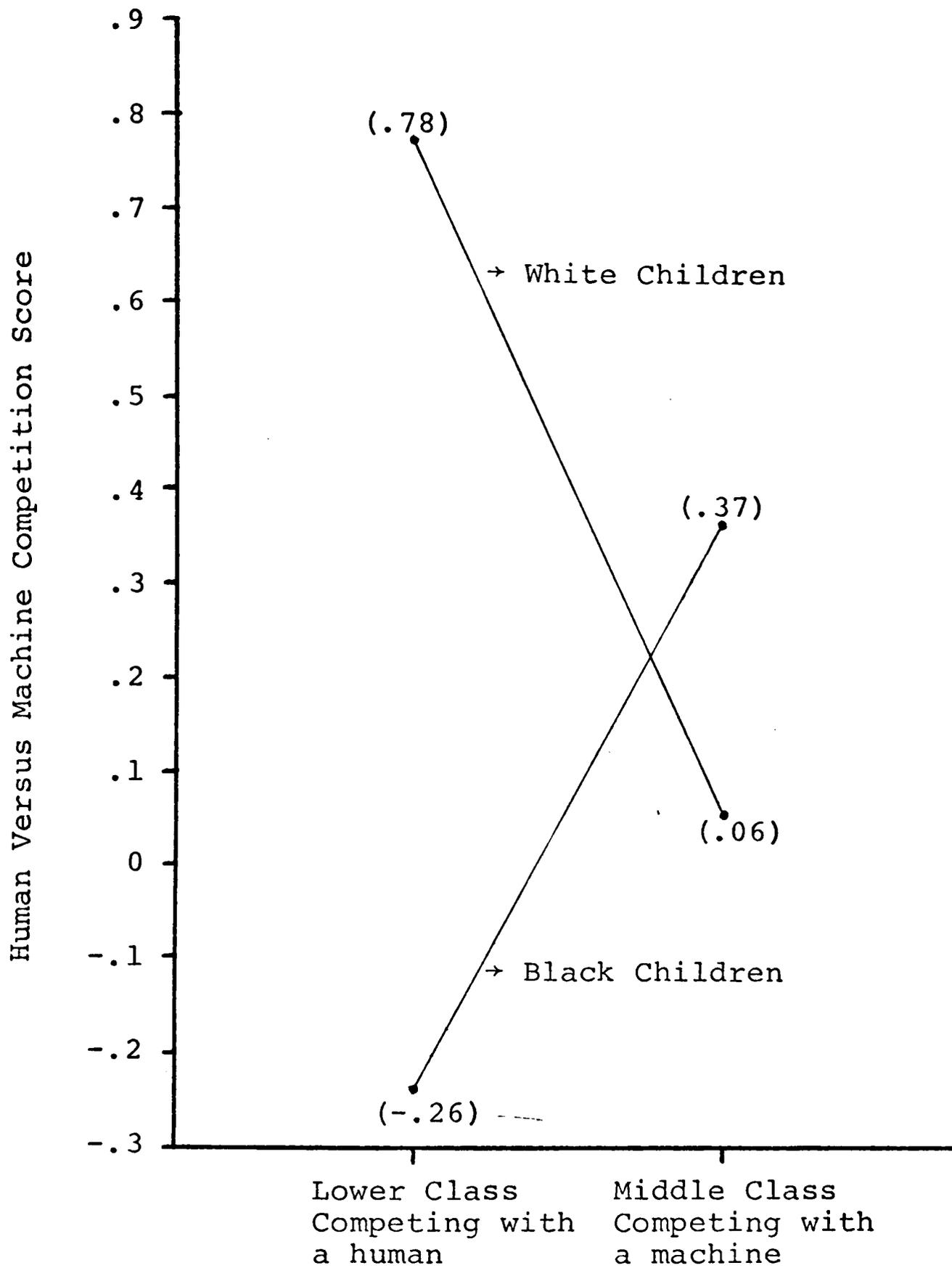


Fig. 6. Race X Socioeconomic Class Interaction using the Competition Score Generated by Comparing Human and Machine Competitive Conditions

Figure 7 presents the race X age X sex interactions using competition scores. Specifically, white older males perform at a higher level than do white younger males, while black older males perform at a lower level than do black younger males. The white older female's performance is higher than the white younger female, while the black older female is higher than the black younger female.

A final point of interest in regard to the competition scores is whether children demonstrated a greater rate of marble dropping when competing against the machine set at a higher rate (50% greater than their base performance rate) on Trial 7, than when the machine was set at a slower rate (50% less than their base level of performance) on Trial 8. A direct difference t test comparing performance on Trial 7 with Trial 8 across all children yielded a significant difference ($t = 20.18$; $df = 111$; $p < .001$) between trials, in the expected direction, with overall performance on Trial 7 ($\bar{X} = 13.26$) being higher than on Trial 8 ($\bar{X} = 12.90$). (See Table 1.) The children performed at a higher level of competitiveness when the machine dropped marbles 50% faster than their base rate than they did when the machine dropped marbles 50% slower than their base rate.

An analysis of variance of the total need achievement scores (Table 4) revealed a significant ($F = 8.273$; $df = 1, 96$; $p < .01$) age difference. The mean for the older

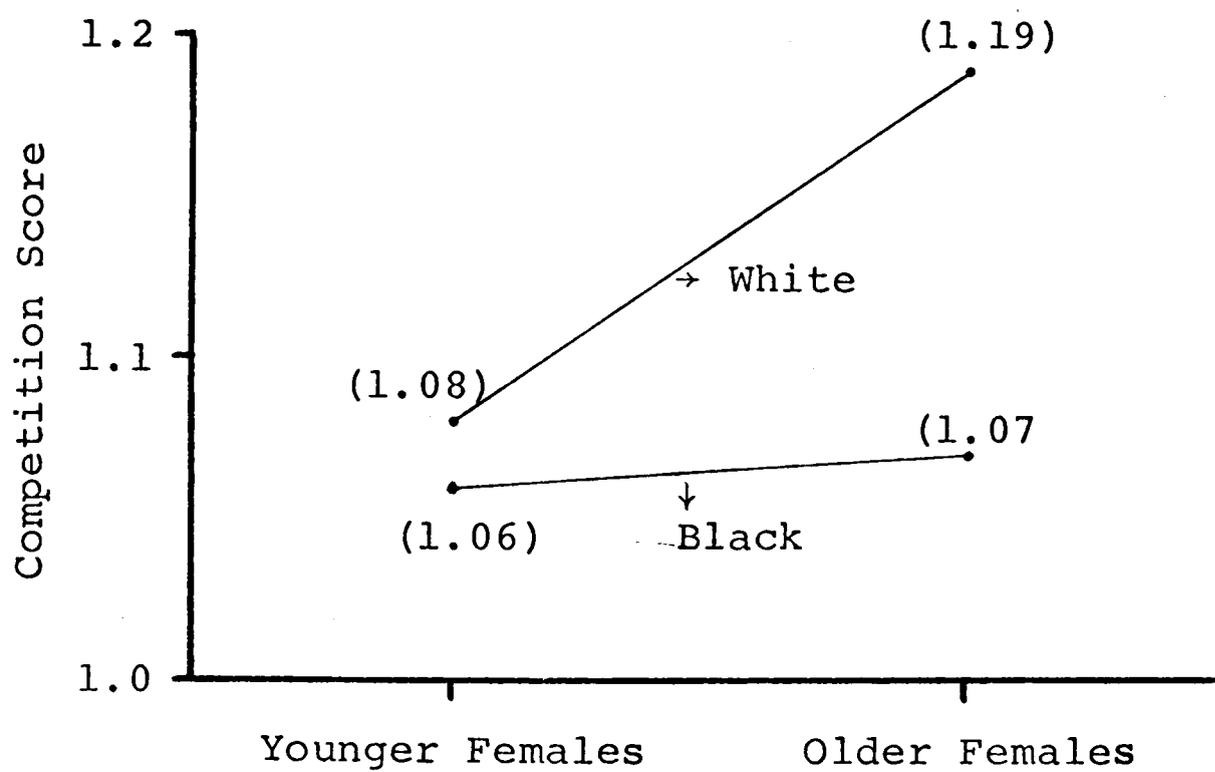
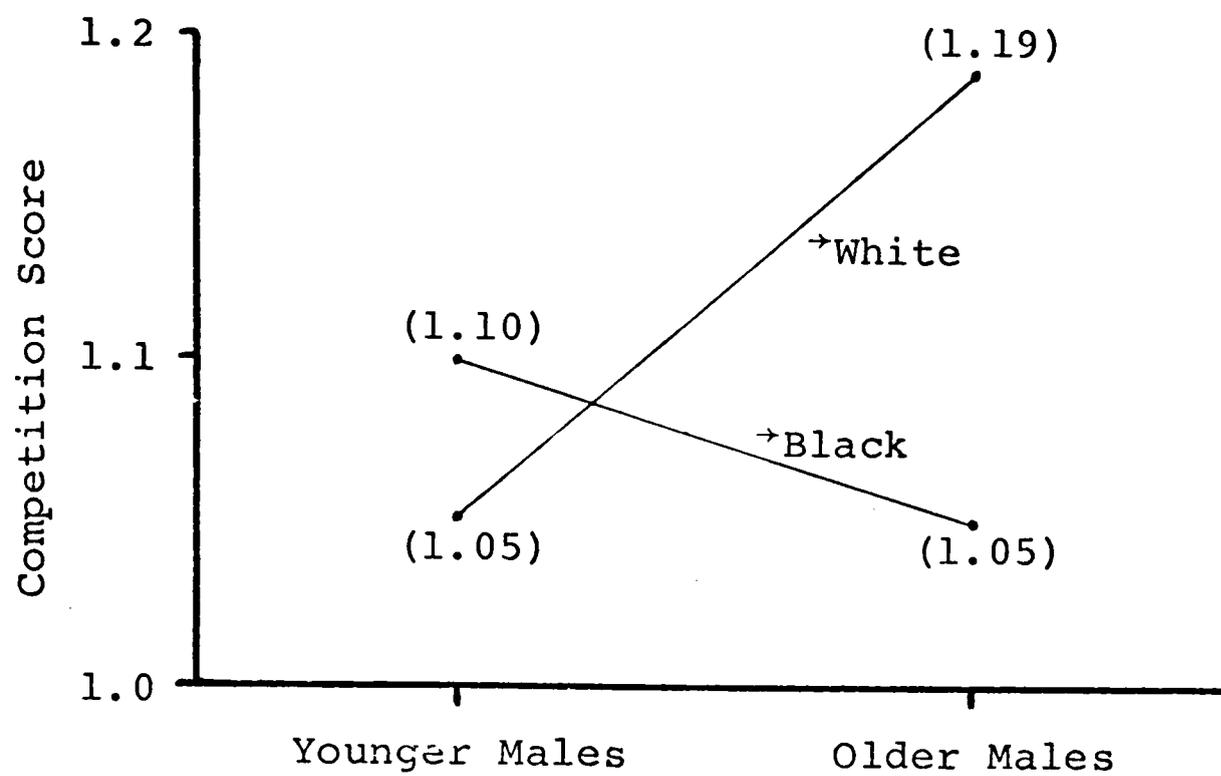


Fig. 7. Race X Age X Sex Interaction using Competition Scores

children was 3.32, while for the younger children the mean was 2.33 (see Figure 8). The older children demonstrated a higher need for achievement than the younger children.

Two interactions were significant: race by socioeconomic class ($F = 6.566$; $df = 1, 96$; $p < .05$) and age by socioeconomic class ($F = 8.273$; $df = 1, 96$; $p < .01$). A plot of the data for the race by socioeconomic class interaction (Figure 9) revealed that the middle class white children have a higher need for achievement than did lower class white children. Middle class black children demonstrated less need for achievement than did the lower class black children.

The other significant interaction, age by socioeconomic class is presented graphically in Figure 10. The mean need achievement score for older and younger middle socioeconomic children is identical, $\bar{X}'s = 2.68$. The lower class older children demonstrated more need for achievement than did the lower class younger children. The older lower class children demonstrated a higher need for achievement ($\bar{X} = 3.96$) than did the older middle class children ($\bar{X} = 2.68$), while the younger lower class children demonstrated less need for achievement ($\bar{X} = 2.00$) than did the younger middle class children ($\bar{X} = 2.68$).

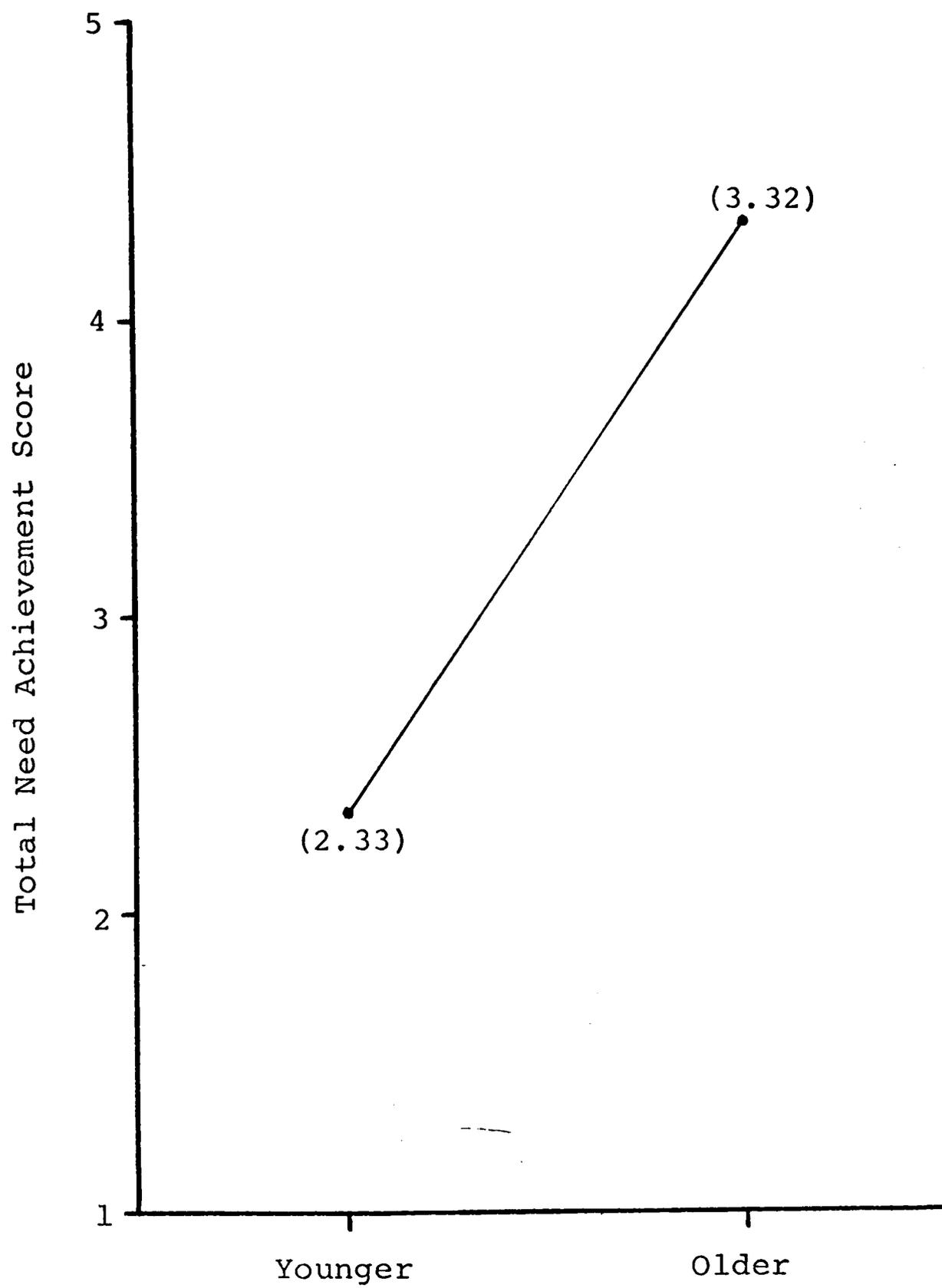


Fig. 8. Need Achievement Scores by Age

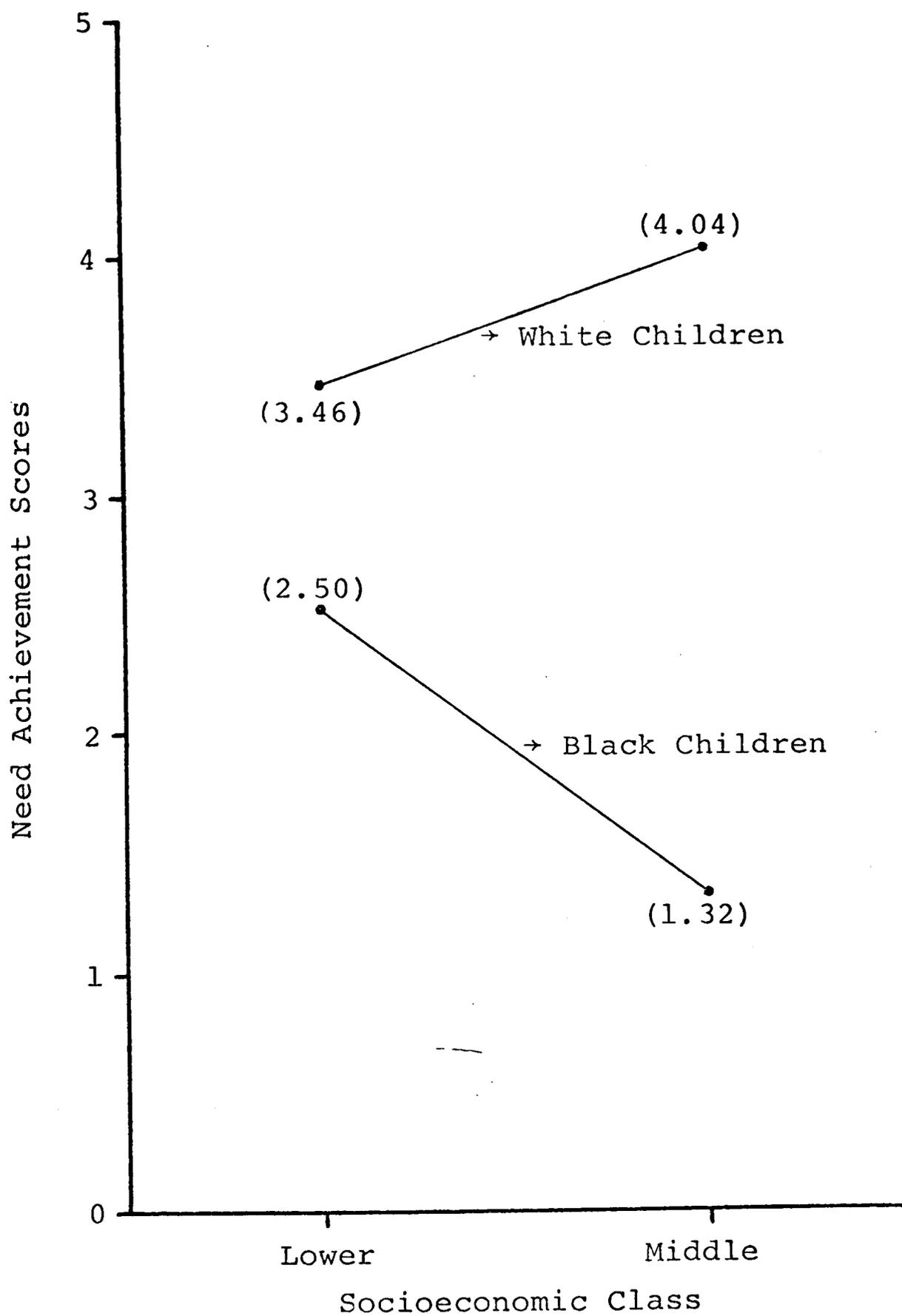


Fig. 9. Race X SE Interaction using Total Need Achievement Scores

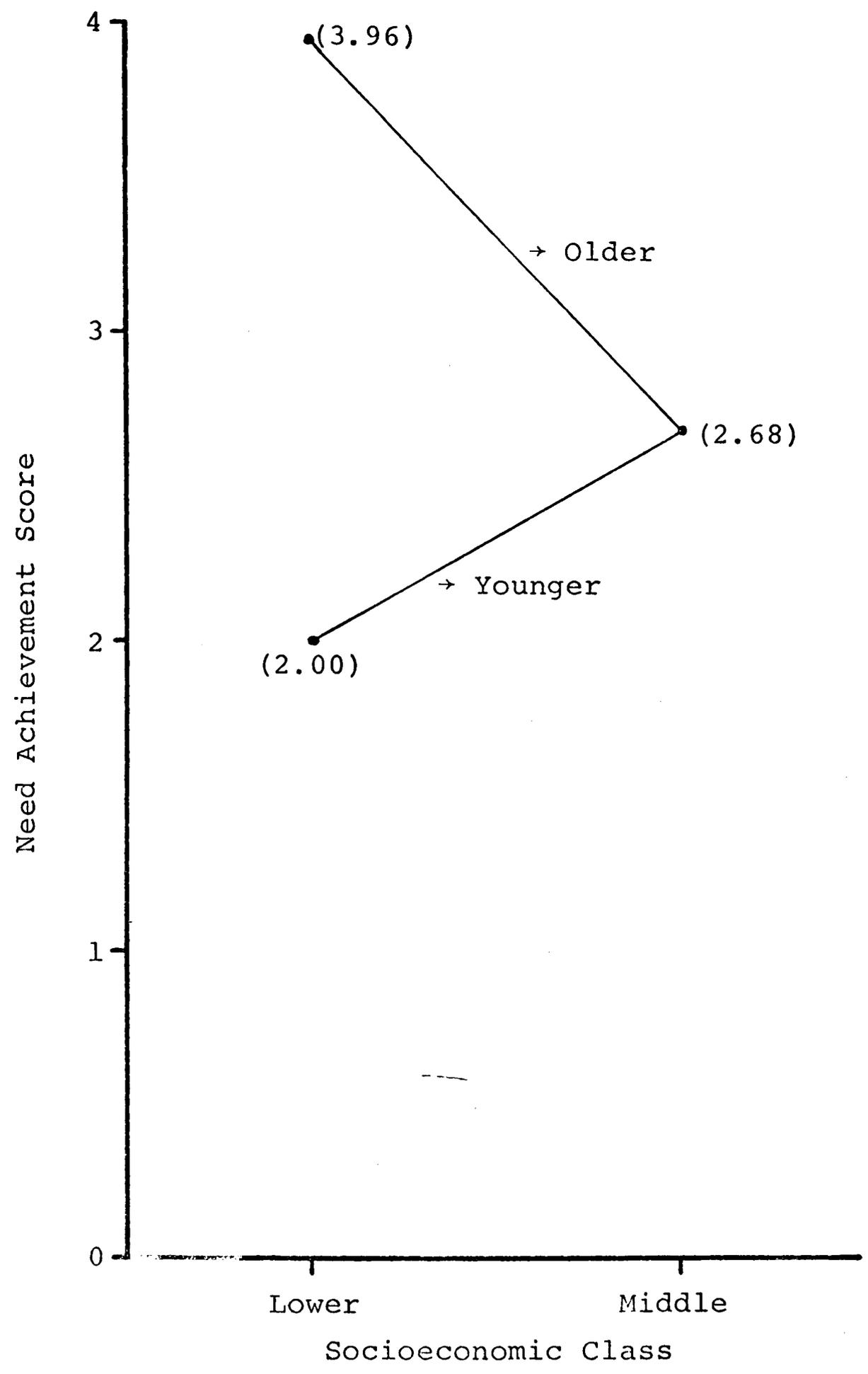


Fig. 10. Age X Socioeconomic Class Interaction using Total Need Achievement Scores

CHAPTER V

DISCUSSION

The discussion of the results follows the order in which the hypotheses were stated in Chapter II.

Hypothesis I which predicted an increase in marble dropping rate in children as a result of competitive stimulation was supported. This result is consistent with previous published literature in the area and the findings of Owens (1969). The children drop more marbles in a competitive situation than in a noncompetitive situation. Children age 6 years and above apparently have learned to compete due to either intrinsic or extrinsic rewards. This also seems to suggest that children of this age have already developed a system of internal motivation, since they increased their behavior in the absence of any readily apparent external reward, with the possible exception of adult approval expected from the experimenter.

The second hypothesis predicting no difference between various ages as to the effect of competitive stimulation was not supported. It was found that when taking the total competition scores of all the children the older children were less responsive to competitive stimulation than the younger children. These findings are not in agreement with the results reported by (Jones, 1972; Owens, 1969; McGee &

Leader, 1955; Greenberg, 1932). These researchers found that older children were more competitive than younger children. However, upon closer examination of the data as shown in Figure 7 (p. 51), the older white male and female children were more responsive to competitive stimulation than the younger white male and female children while the younger black male children were more responsive than the older black male children and the young and old black female children were about equivalent. The performance of the black children indicate that as the black children progresses in age there is a decrease in their competitive performance, whereas, the white children increase their competitive performance with increasing age. This may be explained subculturally in that positive reinforcement from peers and family may not occur to the extent that it does with the white children, and hence, the decrease in their competitive performance. Also, the female black children perform somewhat equally which may suggest that their competitive performance remains stable from age 6 to 9 years, while the male children's performance decreases with age. It can be hypothesized that the male black child experiences more discouragement in this environment as he becomes older and thereby gives up; the discouragement for the black female child is not as pronounced. The white children, experiencing a more enriching and stimulating environment perform higher as they become older.

The present research confirmed the lack of male-female differences in competitive behavior. In the present study, it was found that within the narrow age range selected (age 6 to 9 years), and for the task used, there was no significant difference between the response rate of males and females to the competitive conditions. Previous research by McGee and Leader (1955) reported that boys were more competitive than girls. However, Hurlock (1927) and Owens (1969) found that girls were more competitive than boys. One must be extremely careful in evaluating these differences. The present results probably are related to the ages compared and the type of task selected (physical or mental) rather than actual differences in the competitive behavior between the sexes.

Hypothesis IV predicted a higher degree of competitiveness for middle class children than for lower class children. The hypothesis was not supported. The results indicated that socioeconomic class was not related to competitive behavior. However, Figure 4 (p. 42) indicates that when race is introduced as a variable, lower class white children perform higher than middle class white children, while lower and middle class black children perform at approximately the same rate. McGee and Leader (1955) found that white lower class children competed more than white middle class children, whereas, Owens (1969) found that overall, middle class

children were more competitive than lower class children. The differences found between Owens' study and the current study may be due to differences in lower to middle class interchange between the Southwest (Owens') and New York City.

A race difference in competitiveness was predicted by Hypothesis V and confirmed by the data. White children were more competitive than were black children. This finding is congruent with Karon's (1958) research in which the black children were more suppressed and discouraged by their environment than were the white children. It can be further speculated that the basic way the society is structured, it is simply easier for white children to succeed in whatever they undertake than it is for black children. Therefore, this past history of reinforcement, in conjunction with other by-products such as a better self-concept and more frustration tolerance in white children give them a competitive edge. Another possible factor which could influence competitive performance, and is not related to subcultural developmental distinctions, is the race of the experimenter. In the current study, the fact that the experimenter was white could have had a negative influence on the black children and/or a facilitatory effect on the white children. The specific effect of the experimenter cannot be determined from this study and further research may be needed using a black experimenter to see what effect it may have.

Owens, on the other hand, found that there was no difference between the races. There is, therefore, a need for more data on possible racial differences, especially in light of the current importance of research and of popular interest on this topic.

The sixth hypothesis predicted an interaction of race and socioeconomic class, with middle class black children competing more than lower class black children, and lower class white children competing more than middle class white children. The hypothesis was supported; however, within the black subculture the middle class children perform only slightly higher than the lower class children as shown by Figure 4 (p. 42). The difference between the lower class white children and the middle class white children is higher with the lower class performing at a higher level. One explanation for this result is that the task evokes a competition response that is somewhat equivalent in the blacks but not in the whites. The middle class white children possibly become bored with the task and with the simple demands made, while the lower class whites and both lower and middle class black children appear to be more challenged and hence more responsive.

Owens (1969) found that white and black lower class children competed less than did middle class children. This finding is difficult to interpret in light of the present results.

Hypothesis VII predicted that there would be a significant interaction between socioeconomic class and the type of competition (human or machine). This hypothesis was not supported. It was hypothesized that the middle class child would be better socially adjusted and more responsive to human interaction than the lower class child, which would result in a relative increase in competitiveness when the middle class child is confronted with a human to compete with, while the lower class child would show a relative decrease in competitiveness. It was found that both the middle and lower class children responded more to the human than to the machine. However, as Figure 5 (p. 48) shows, overall the middle class children respond at a higher rate for both the machine and human competition trials.

Hypothesis VIII predicted that the level of competitiveness for all children would increase when competing with a human rather than with a machine. This hypothesis was confirmed. This is an intuitively logical result because children are much more accustomed to competing with people than with machines. This replicates a more natural competitive situation than does competing with a machine. It should be noted that the elevation in performance may simply be due to a novelty effect of having something new to do (competing with a human) after three trials of competing with a machine.

At any rate, this should be investigated further to see if the human, or the stimulus change per se, causes a performance elevation.

A higher level of need achievement for white children than for black children was postulated by Hypothesis IX. This hypothesis was supported. Need achievement in this study was defined in terms of expectancy of success. It was assumed that white children have had more opportunity to experience success in the past than the black children. It was expected that this difference in experience with success would be carried over into the experiment in terms of how the black children viewed their chances of success on the new task.

A direct relationship between need achievement and competitiveness in children was predicted by Hypothesis X. This hypothesis was supported. A high positive relationship exists between these two behavioral measures. This suggests that there is some congruence between how a child expects to perform and how he actually performs. It is hypothesized that a child's expectation of performance, which is related to prior successful experiences, influences the level of his competitive performance. Children who do not have a high need achievement level expect lower performance and produce less than the high need achievers.

The following involves an evaluation of the related findings presented in the results section. The first

related finding indicated that older children demonstrate a greater competitive increase than do younger children when competing with a machine than when competing with a human. This result is congruent with the assumption that the older children are more advanced in their socialization than younger children and therefore have more experience with interacting on both a competitive and noncompetitive situation. There may be some negative influences in operation in that the older children are less intimidated by adults (i.e., the experimenter) than are younger children because of more experience with them and/or being chronologically closer to them.

The second related finding indicated that middle class children demonstrated a higher competitive score than lower class children when competing against a machine and against a human. The finding is in agreement with Owens (1969) who found that middle class children competed more than lower class children. This suggests that competitiveness increases as a function of socioeconomic class.

A significant race by socioeconomic class interaction was found. Lower class white children responded more positively to human competition relative to mechanical competition than did middle class white children. Lower class black children responded to human competition less than that observed in middle class black children. The

nature of this interaction is qualitatively the same as was obtained under the Hypothesis IV comparison. The white middle class children may have become bored with the simplicity of the task and hence performed less than the lower class white children. The lower class black children competed less with a human than with a machine, while the middle class blacks competed more with the human than with the machine. This may be due to the fact that lower class blacks have generally had less interaction with a white experimenter than the middle class blacks; therefore, they are less at ease in such a situation than the middle class blacks.

The fourth related finding found a significant race X age X sex interaction using the total competition scores. Older white males compete at a higher level than younger white males, while older black males compete less than younger black males. For the females, the older white females perform higher than younger white females, and the older black females higher than the younger black females. Competitiveness increases as a function of age for male and female whites and for black females but decreases with age in the black male. The decreased performance in the black male may be due to discouraging experiences in the environment as he becomes older, since the opportunities for success are far greater for the white child than for the black child. Owens (1969) found the

same phenomenon and explained the decrease in the black male's competitiveness to the black subculture which is basically matriarchal. The dominant person in many black families is the woman rather than the man, and therefore, the male does not have a strong male identification figure which may have a direct relationship to his expression of competitiveness. In addition, the norm at home for the black male may be noncompetitiveness.

The final related finding regarding the competition scores is that the speed of the mechanical competitor influenced competitive performance. When the children were competing against the machine, which was set 50% faster than their base rates, they responded with a higher frequency of marble dropping than when the machine was set 50% slower than their base rates. This lends support to Moede's (1914) and Owens' (1969) findings that the subjects' response rates are influenced by the speed of their rivals as well as competitive stimulation. The faster the speed of the rival, the higher rate of response is elicited.

The related findings concerning the need achievement analysis found that older children had higher need achievement scores than the younger children. This may be parsimoniously explained by the fact that the older children have become more learned about and integrated into a society which places a great deal of emphasis on success and therefore

is reflected in their higher need achievement scores. In addition, the task to measure need achievement was a written one; therefore, the older children may have had an unfair advantage over the younger children, being more advanced in education and more facile with words. This could have biased the results in favor of the older children.

A race by socioeconomic class interaction was found for the need achievement scores. The middle class whites produced a higher need achievement score than the lower class whites; however, the lower class blacks had a higher need achievement score than the middle class blacks. A possible explanation for these findings is that middle class white children are more exposed to success and reinforced for this type of behavior than lower class white children, and consequently this is reflected in their higher need achievement score. For the black children, the situation is qualitatively different: since the middle class blacks are more in touch with white society, they feel more thwarted by the general black-suppressing atmosphere and therefore less sure about succeeding, which is reflected in their lower need achievement scores. The lower class blacks are not in direct contact with the white society as much as the middle class blacks and, therefore, their scores are higher than those of the middle class blacks.

The interaction between age and socioeconomic class for the need achievement scores showed that the older lower class children demonstrated more need for achievement than the younger lower class children, while there was no significant difference between the older and younger middle class children. These results suggest that middle class children are more homogeneous than lower class children in their aspirations for success. It is hypothesized that the reason the lower class children show a difference is that when they enter school (younger child) they are not well acquainted with certain middle class values, among them the necessity to strive for success and to do so in a certain manner. However, by the time the child has been in school for several years (older child), he has absorbed these ideals and incorporated them as his own because the school system is structured around a middle class success-reward system.

CHAPTER VI

CONCLUDING REMARKS

In summary, this experiment has demonstrated the following: (1) The marble dropping task is a useful tool in demonstrating competitive behavior in young children; (2) Children respond positively to competitive stimulation; (3) Children respond differently to machine versus human competition; (4) Competitive behavior is a complex function of age, socioeconomic class, race, and sex of the child; and (5) Competitive behavior and need for achievement are closely related in the young child.

In general, there is much need for further research and clarification of the drive to compete, as found in young children. The fact that there are several points of agreement between Owens' study and the present one suggest that certain trends may be significant. The inconsistencies between the two studies should also encourage more research to determine whether these findings may be spurious or related to a specific difference between the two studies.

Some specific suggestions to guide further research in this area are listed:

1. The influence of the experimenter on competitive behavior should be investigated. The most obvious

problem may be the race of the experimenter and how this differentially influences responses from children of another race. The present study used a white experimenter, and thus some of the main effects and interactions involving race may not be representative of actual response patterns in the population of children. In addition, other characteristics of the experimenter, in terms of the other variables used, should be considered, such as the fact that he was older, of middle socioeconomic class, and a male. The determination of the influence of these characteristics may prove to be of theoretical interest.

2. A possible problem postulated in the present study is that the task may not be uniformly stimulating to all children. It was suggested that the marble dropping task may not be optimally stimulating in terms of competitive behavior for certain age levels, while it may be too complex for younger children and too boring for older children. Therefore, investigation of age appropriate and age equivalent tasks appears worthy of study.
3. There is a question of whether the "need for achievement" test used is biased in favor of the older child. Since it is a written test, it may be that the older children have an advantage

because they can write better than younger children. A procedural change might be considered such as recording the children's responses which would tend to reduce the possible effect due solely to maturation.

4. The relationship between academic success and competitive behavior in children has not been explored; thus an investigation of the relationship between these variables would further the understanding of competitive behavior in children.

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APPENDIX

A. Individual Scores

B. Need Achievement Individual Scores

APPENDIX A:: INDIVIDUAL SCORES

First Grade Middle Class Black Girls

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
S.J.	4	10	11	11	10	11	12	12	13	13	12
D.F.	5	10	11	10	9	11	12	13	12	12	12
R.P.	5	13	13	13	13	13	14	15	12	14	14
S.E.	3	7	7	10	10	9	10	11	11	10	11
M.P.	2	11	12	10	13	12	13	12	12	13	15
G.W.	2	13	12	12	12	12	12	12	11	12	13
P.H.	1	13	11	11	12	11	12	12	13	12	14
		77	77	77	79	79	85	87	84	86	91

Third Grade Middle Class Black Girls

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
L.S.	1	14	14	13	13	13	14	16	14	15	16
D.M.	2	15	15	15	14	15	16	17	13	17	16
M.J.	3	14	12	14	13	14	15	15	14	16	16
C.S.	4	14	12	14	13	14	15	15	14	16	16
L.P.	1	13	14	13	13	14	15	16	15	16	16
D.S.	2	14	12	15	14	15	16	16	15	16	17
D.S.	1	15	14	15	15	15	16	17	16	16	17
		99	93	99	95	100	107	112	101	112	114

First Grade Middle Class Black Boys

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
G.R.	1	11	11	13	14	14	17	17	16	16	15
E.C.	2	12	13	12	12	12	13	15	15	14	14
A.J.	3	12	12	12	12	12	14	14	15	15	15
R.T.	2	10	10	10	10	10	11	10	12	12	12
D.M.	2	13	12	11	13	12	11	14	11	14	15
J.P.	4	9	12	11	10	11	11	12	12	13	13
C.W.	3	11	10	11	11	11	12	12	10	12	11
		78	80	80	82	82	89	94	91	96	95

Third Grade Middle Class Black Boys

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
A.J.	2	14	15	14	15	14	14	16	16	15	15
J.S.	3	15	12	12	13	13	14	14	15	14	15
R.C.	5	16	15	16	15	15	15	14	14	17	15
M.R.	4	11	15	14	12	16	16	16	15	14	16
C.C.	2	12	12	11	12	12	13	15	12	13	14
T.W.	1	10	12	13	13	13	14	13	14	15	14
J.B.	3	15	12	13	15	15	17	16	16	16	16
		93	93	93	95	98	103	104	102	104	105

First Grade Lower Class White Girls

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
V.C.	6	12	11	12	13	13	14	15	14	15	15
G.M.	6	11	10	9	9	9	11	12	11	11	13
L.L.	7	11	12	12	11	12	13	14	14	14	15
P.P.	7	10	9	12	11	12	12	14	13	14	14
M.M.	7	10	13	13	14	14	15	16	15	14	17
D.K.	7	12	14	14	13	15	16	17	15	14	16
J.K.	7	13	12	11	13	13	15	16	15	14	15
		79	81	83	84	88	96	104	97	96	105

Third Grade Lower Class White Girls

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
R.P.	7	11	11	10	10	10	12	13	12	12	13
T.B.	7	13	12	12	12	12	13	13	13	15	14
C.A.	7	13	12	12	13	12	14	17	15	16	17
K.H.	6	13	13	12	13	13	15	16	15	15	17
K.H.	6	13	13	13	13	13	13	14	14	14	17
T.L.	7	13	14	13	13	13	15	15	15	16	17
S.L.	7	15	14	15	15	15	15	16	16	16	17
		91	89	87	89	88	97	104	100	104	112

First Grade Lower Class White Boys

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
R.J.	7	12	12	11	11	11	13	14	13	12	13
R.D.	6	10	12	12	11	12	12	13	13	11	14
R.H.	7	12	11	10	9	10	10	12	12	13	12
G.E.	7	12	13	14	13	13	14	16	15	14	16
K.J.	6	13	13	13	14	13	13	15	13	15	16
J.C.	6	12	11	9	9	10	11	13	12	11	13
T.H.	7	12	12	13	12	12	13	13	13	13	14
		83	84	82	79	81	86	96	91	89	98

Third Grade Lower Class White Boys

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
D.T.	7	12	17	16	15	13	14	16	14	13	14
E.T.	5	12	12	11	12	12	13	15	15	14	16
M.T.	6	12	9	9	12	9	11	11	10	12	13
M.W.	7	14	12	12	15	14	16	17	14	14	16
M.T.	7	11	10	11	11	11	13	14	13	14	14
L.F.	7	14	12	12	14	12	13	15	14	15	17
L.J.	7	14	13	14	14	14	16	14	14	14	15
		89	85	85	93	85	96	102	94	96	105

First Grade Lower Class Black Girls

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
L.O.	6	10	9	12	12	11	12	14	14	13	12
C.I.	7	11	10	9	9	10	10	9	9	9	10
M.J.	6	9	9	11	11	11	12	14	12	12	13
P.W.	7	11	12	11	11	11	13	13	13	12	13
J.J.	5	9	9	9	10	9	9	8	10	10	9
M.H.	7	9	10	9	10	9	9	6	9	10	7
H.W.	7	9	7	6	8	8	9	9	9	10	11
		68	66	67	71	69	74	73	76	76	75

Third Grade Lower Class Black Girls

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
D.M.	6	11	10	8	10	10	9	10	10	10	12
D.M.	7	10	11	10	10	10	9	11	10	11	10
K.J.	7	11	10	10	11	11	11	11	12	12	13
D.B.	7	8	11	10	10	11	13	11	13	13	13
P.P.	7	7	9	9	10	9	12	11	10	12	13
L.O.	7	11	11	10	10	11	10	12	10	10	12
T.C.	7	10	9	10	10	9	9	11	9	9	9
		68	71	67	71	71	73	77	74	77	82

First Grade Lower Class Black Boys

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
G.M.	7	11	11	9	11	11	13	11	12	10	9
W.C.	7	10	9	11	10	8	9	9	10	8	10
D.P.	7	8	9	8	8	8	9	8	6	10	9
M.D.	6	12	11	13	11	10	9	10	11	11	10
G.C.	7	11	10	10	10	10	11	12	12	12	11
J.L.	7	9	12	11	10	11	11	9	9	9	10
M.G.	7	13	13	12	12	12	14	12	12	11	13
		74	75	74	72	70	76	71	72	71	72

Third Grade Lower Class Black Boys

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
R.W.	7	7	8	8	9	9	11	8	9	9	8
R.J.	7	11	10	11	11	11	12	12	12	13	10
B.M.	7	8	9	10	9	11	11	11	12	10	7
T.A.	7	10	8	9	8	10	10	9	10	9	10
A.L.	7	11	10	10	11	11	12	11	11	12	9
L.P.	7	9	8	7	8	9	7	9	9	9	8
T.J.	7	9	10	8	9	9	9	10	8	8	8
		65	63	63	65	70	72	70	71	70	60

First Grade Middle Class White Boys

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
D.P.	3	9	12	12	12	13	12	15	15	15	15
T.R.	1	13	13	12	12	13	14	15	13	15	13
J.W.	1	14	12	14	13	13	14	16	15	15	14
J.J.	2	10	11	13	13	12	13	14	13	12	13
R.P.	2	15	15	16	16	17	18	18	17	16	17
J.P.	3	13	15	12	13	14	15	15	15	15	15
D.N.	2	11	12	12	12	12	11	12	13	12	12
		85	90	91	91	94	97	105	101	100	99

Third Grade Middle Class White Boys

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
J.H.	2	9	8	7	9	8	9	8	10	9	10
N.A.	2	11	10	8	11	11	15	17	16	16	17
M.S.	3	10	8	9	9	10	13	13	12	9	12
M.R.	1	15	13	14	13	13	14	16	15	15	14
K.C.	3	14	14	14	15	13	16	16	14	16	15
R.D.	2	14	12	12	12	13	14	14	14	14	15
L.P.	2	15	14	15	14	15	16	18	18	19	18
		88	79	79	83	83	97	102	99	98	101

First Grade Middle Class White Girls

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
J.J.	2	11	11	11	10	10	13	14	14	14	14
J.S.	2	10	14	12	13	13	14	14	14	15	13
J.J.	3	13	14	14	14	14	15	16	15	16	15
P.T.	1	11	10	12	13	12	10	13	12	13	14
S.F.	1	10	9	9	10	11	11	12	12	12	12
K.O.	4	10	11	12	12	12	13	13	13	12	12
V.B.	1	13	15	16	16	15	17	17	17	16	17
		78	84	86	88	87	93	99	97	98	97

Third Grade Middle Class White Girls

S	Occup. Level	Number of Marbles Dropped Per Trial									
		1	2	3	4	5	6	7	8	9	10
K.S.	3	9	3	7	9	8	9	8	10	9	10
R.M.	1	12	13	12	12	12	15	14	15	14	15
S.D.	1	11	12	11	11	11	13	13	15	13	15
J.J.	2	13	13	12	13	13	15	13	16	15	15
S.S.	4	9	10	9	9	9	13	12	15	13	15
R.M.	1	10	9	10	10	10	13	14	13	12	14
D.M.	1	7	8	8	8	9	10	11	11	10	11
		71	73	69	72	72	88	85	95	86	95

APPENDIX B: NEED ACHIEVEMENT INDIVIDUAL SCORES

First Grade Lower Class White Boys

S	1	2	3	4
R.J.	0	0	-1	0
R.D.	0	0	-1	0
R.H.	0	0	-1	0
G.E.	2	0	-1	-1
K.J.	-1	-1	-1	-1
J.C.	-1	0	-1	-1
T.H.	-1	0	-1	-1

Third Grade Lower Class White Boys

S	1	2	3	4
D.T.	0	3	-1	0
E.T.	0	0	-1	0
M.T.	0	0	-1	0
M.W.	0	0	-1	0
M.T.	0	0	-1	0
L.F.	0	3	-1	-1
L.J.	0	0	0	-1

First Grade Lower Class Black Boys

S	1	2	3	4
G.M.	-1	-1	-1	0
W.C.	-1	0	-1	0
D.P.	-1	-1	-1	-1
M.D.	0	-1	-1	0
G.C.	-1	0	-1	-1
J.L.	-1	-1	-1	0
M.G.	-1	0	-1	0

Third Grade Lower Class Black Boys

S	1	2	3	4
R.W.	0	0	-1	-1
R.J.	0	2	-1	-1
B.M.	4	3	0	0
T.A.	0	0	0	-1
A.L.	0	0	-1	-1
L.P.	0	0	-1	0
T.J.	0	0	-1	0

First Grade Lower Class Black Girls

S	1	2	3	4
L.O.	-1	0	-1	-1
C.I.	0	0	-1	-1
M.J.	0	0	-1	-1
P.W.	-1	0	-1	-1
J.J.	0	-1	-1	-1
M.H.	-1	-1	-1	-1
H.W.	0	0	0	0

Third Grade Lower Class Black Girls

S	1	2	3	4
D.M.	0	3	-1	0
D.M.	0	0	-1	-1
K.J.	0	3	-1	0
D.B.	0	4	-1	-1
P.P.	0	0	0	0
L.O.	0	0	-1	0
T.C.	0	0	-1	-1

First Grade Lower Class White Girls

S	1	2	3	4
V.C.	-1	0	-1	0
G.M.	-1	0	-1	-1
L.L.	0	0	0	0
P.P.	-1	4	-1	0
M.M.	0	0	-1	0
D.R.	0	0	0	0
J.R.	0	0	-1	-1

Third Grade Lower Class White Girls

S	1	2	3	4
R.P.	0	2	0	0
T.B.	0	3	-1	-1
C.A.	0	0	0	0
R.H.	0	0	-1	-1
R.H.	0	0	-1	-1
T.L.	0	3	0	0
S.L.	4	0	0	0

First Grade Middle Class Black Boys

S	1	2	3	4
G.R.	-1	-1	-1	-1
E.C.	-1	-1	-1	-1
A.J.	-1	-1	-1	-1
K.T.	-1	-1	0	0
D.M.	-1	-1	-1	-1
J.P.	-1	-1	-1	-1
C.W.	-1	-1	-1	0

Third Grade Middle Class Black Boys

S	1	2	3	4
A.J.	0	-1	-1	-1
J.S.	-1	-1	-1	-1
R.C.	-1	-1	-1	-1
M.R.	0	-1	-1	0
C.C.	0	0	-1	0
T.W.	0	0	-1	-1
J.B.	0	0	-1	-1

First Grade Middle Class White Girls

S	1	2	3	4
J.J.	-1	0	0	-1
J.S.	0	0	-1	0
J.J.	0	3	0	0
P.T.	0	0	-1	-1
S.F.	0	0	-1	0
R.O.	-1	3	-1	-1
V.B.	0	4	-1	-1

Third Grade Middle Class White Girls

S	1	2	3	4
R.S.	0	0	0	0
R.M.	0	2	0	0
S.D.	4	0	0	0
J.J.	-1	0	-1	-1
S.S.	4	0	0	0
R.M.	0	0	-1	-1
D.M.	0	0	0	-1

First Grade Middle Class White Boys

S	1	2	3	4
D.P.	0	3	-1	-1
T.R.	-1	0	0	0
J.W.	0	0	-1	0
J.J.	-1	0	-1	-1
R.P.	0	2	0	0
J.P.	0	0	-1	0
D.N.	-1	0	0	0

Third Grade Middle Class White Boys

S	1	2	3	4
J.H.	0	0	-1	-1
N.A.	5	0	0	0
M.S.	3	0	-1	-1
M.R.	0	0	-1	-1
R.C.	0	0	4	0
R.D.	0	0	0	-1
L.P.	5	3	0	6

First Grade Middle Class Black Girls

S	1	2	3	4
S.J.	-1	-1	-1	-1
D.F.	-1	0	-1	-1
R.P.	-1	-1	-1	-1
S.E.	0	-1	-1	-1
M.P.	-1	0	-1	0
G.W.	-1	0	-1	-1
P.H.	-1	-1	-1	-1

Third Grade Middle Class Black Girls

S	1	2	3	4
L.S.	0	0	-1	0
D.M.	0	0	0	-1
M.J.	-1	-1	-1	-1
C.S.	0	0	-1	-1
L.P.	0	0	-1	0
D.S.	0	-1	-1	-1
D.S.	0	-1	-1	-1

