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ABSTRACT

The problem was to evaluate the self-concept differences revealed in the personality profiles of underdeveloped junior high school boys who had been participating in a special non-competitive program of physical education. Five subproblems were explored. The underdeveloped boys were compared with junior high athletes for personality differences. A random sample of the undeveloped boys received additional verbal encouragement from the instructor to see if further personality changes were evident. Results indicate that allowing physically underdeveloped boys to participate in an environment using self-based evaluation standards rather than competitively based standards contributed to gains in emotional security and sense of personal worth. The recommendations of the study are that further research be conducted in the area of self-evaluation uses in more standard academic curricular subjects which may lend themselves to self-evaluation. (Author/LAA)

ABSTRACT

THE EFFECT OF A SELF-EVALUATION ENVIRONMENT ON GROWTH IN SELF-PERCEPTION

By

W. Eugene Trimble

A. B. Gordon College, 1960

M. A. University of Northern Colorado, 1963

Joseph Carol, Ed.D., Dean of
Advisement, Walden University
Naples, Florida

A Dissertation Submitted in Partial Fulfillment of
The Requirements for the Degree of
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AN ABSTRACT

THE STATEMENT OF THE PROBLEM

The problem was to evaluate the self-concept differences revealed in the personality profiles of underdeveloped junior high school boys who had been participating in a special non-competitive program of physical education.

Five subproblems were explored. The underdeveloped boys were compared with junior high athletes for personality differences, the factor clusters formed by before and after testings were examined for within and between group variance; and a random sample of the underdeveloped boys received additional verbal encouragement from the instructor to see if further personality changes were evident.

THE RESEARCH METHODOLOGY

Physical and psychological data were gathered at both the beginning and at the end of the school term. The National Physical Fitness Test and The California Psychological Inventory were used to gather the data. Before and after analysis of the between group, within group and factor analytic differences were made using an IBM 7094 Computer. Analysis based on the original computer outputs were made on electric calculators as they were needed.

THE IMPORTANCE OF THE STUDY

The results of this study indicate that allowing physically underdeveloped boys to participate in an environment using self-based

evaluation standards rather than competitively based standards contributed to gains in emotional security and sense of personal worth.

The factor analytic comparisons revealed a definite change in the personality profiles of the boys involved in the special program. Their post-test profile fits the factor models identified in other factor analytic studies made of The California Psychological Inventory. Their pre-test profile was significantly different.

The recommendations of the study are that further research be conducted in the area of self-evaluation uses in more standard academic curricular subjects which may lend themselves to self-evaluation. If groups participating in environments that allow periodic, effective, self-evaluation do show positive personality changes or other areas of growth, the place of self-evaluation in the overall evaluation program of the school should be established. This study supports earlier studies by Rogers, Russell, and Duel that students will benefit from increased participation in evaluating their own growth and progress.

ACKNOWLEDGMENTS

The investigator is indebted to many people for their assistance with this study.

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THE PROBLEM AND ITS SETTING

STATEMENT OF THE PROBLEM

The problem was to evaluate the self-concept differences revealed by the personality profiles of underdeveloped junior high school boys who participated in a non-competitive, self-evaluat[illegible] of physical development conducted in an urban junior high school during an academic year.

THE SUBPROBLEMS

Subproblem 1. The first subproblem was to identify the personality factor clusters, revealed by a standardized personality inventory, for the underdeveloped boys and a comparison group of junior high school athletes.

Subproblem 2. The second subproblem was to determine if any significant self-concept changes resulted in the personality profiles of the underdeveloped boys after a nine month involvement in a self-evaluation environment.

Subproblem 3. The third subproblem was to investigate if the post-test personality profiles of a randomly selected sample of underdeveloped boys, selected to receive additional verbal encouragement from the program's instructor, differed significantly from the profiles of underdeveloped boys not receiving verbal encouragement.

Subproblem 4. The fourth subproblem was to investigate if the post-test personality profiles of the underdeveloped boys differ from the post-test personality profiles of the athletes at the completion of the self-evaluation program.

Subproblem 5. The final subproblem was to determine if the personality profiles of the athletic boys differed significantly on their pre- and post-test CPI results when they were not involved in self-evaluation.

DELIMITATIONS

1. The subgroups in this study were selected from the male student population in grades seven through nine in an urban junior high school of 1,024 students.

2. Only selected male students, who were classified as either underdeveloped or athletes, were selected for personality testing.

3. The study covered the period of one academic school year of approximately nine months.

4. The personality profiles for all boys were developed from using The California Psychological Inventory.[1]

DEFINITIONS OF TERMS USED

The term underdeveloped refers to any junior high boy enrolled in the school who did not meet the minimum requirements established for passing the National Youth Physical Fitness Test[2] when it was administered to the entire student body at the beginning of the fall term of the school year.

The term athlete refers to those boys selected to compete on any official athletic team which represented the junior high school in interscholastic athletic competition.

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[1]H. G. Gough, The California Psychological Inventory (Palo Alto, California: Consulting Psychologist Press, Inc., 1957).

[2]American Association for Health, Physical Education and Recreation, Youth Fitness Test Manual. (Washington, D. C.: The Association, A Department of the National Education Association, 1961).

Factor cluster refers to the statistical groupings of the eighteen separate scales of the California Psychological Inventory (CPI)[3] which the analysis of the data reveal as sharing significant common variance.

Encouragement means the special verbal "pat-on-the-back" given by the instructor to underdeveloped boys chosen at random to receive such recognition for any strength or performance increases or growth.

Self-evaluation describes the process of physically recording, by the individual underdeveloped boy, his own strength and performance gains and standards. This noting and updating were performed every two weeks during the period of the program. The initial standard for evaluation of growth was the original set of scores from the physical fitness tests.

HYPOTHESES

The following hypotheses were tested in this study.

Hypothesis 1. Prior to involvement in the experimental physical education program, the underdeveloped boys, as a group, will not differ significantly in self concept from the athletes, as a group, based on personality profiles revealed by the CPI.

Hypothesis 2. The personality profiles of the underdeveloped boys after participating in the self-evaluation program will not differ significantly from their personality profiles before the program.

Hypothesis 3. The personality profiles of the underdeveloped boys not receiving special verbal encouragement from the program's instructor will not differ significantly from the profiles of the group of underdeveloped boys who received special encouragement during the program.

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[3] Gough, loc. cit.

Hypothesis 4. The group personality profile of the underdeveloped boys will not differ in composition from the group personality profile of the athletes at the end of the experimental program involving the underdeveloped boys.

Hypothesis 5. The personality profiles of the athletic boys will not differ significantly between measures taken in the fall and the spring of a school term based on participation in inter-scholastic athletics.

ASSUMPTIONS

The following assumptions were made:

1. The underdeveloped boy has lower self acceptance and sense of well being than his athletic counter part.

2. Creating a non-competitive environment with an emphasis on self-growth will produce positive personality change.

THE PROBABLE VALUE AND IMPORTANCE OF THE STUDY

Personality has been defined by Hilgard[4] as "the individual characteristics and ways of behaving which, in their organization or patterning, account for the individual's unique adjustments to his total environment." Snygg and Coombs[5] state, --"What a person thinks and how he behaves are largely determined by the concept he holds about himself and his abilities."

Our culture with its social and intellectual complexities forces the adolescent, while in a period of growing maturity, to feel social,

[4]E. Hilgard, Introduction to Psychology (New York: Harcourt, Brace and World, Inc., 1962), p. 23.

[5]A. W. Coombs and D. Snygg, Individual Behavior: A Perceptual Approach to Behavior (New York: Harper and Row Book Co., 1959), p. 18.

emotional, and physical insecurity. Adolescence is a cultural period of transition; a child is becoming an adult. Physically, he is no longer a child; emotionally and socially he is not yet an adult. Due to the stresses of the adolescent transition it is, within our culture, a difficult period. If the adolescent can gain self-understanding and self confidence during this transition, much will be gained toward future maturity.

Adolescents need to experience social acceptance while maintaining their individuality. Early adolescent years are frequently times of low self acceptance, low emotional wellbeing and insecurity. In these cases, the mental health of the adolescent needs to be improved and the concept of being, or soon becoming, an adequate self needs to develop. Brown[6] stated, an educational system can strongly influence feelings in the direction of either potency or impotency. If the system initiates or promulgates feelings of failure, low self-esteem, or self-depreciation, it can easily contribute to feelings of impotence.

Scott[7] has said, "It is more human to say, 'I can' and 'I will,' than to say, 'it makes no difference.' Our society values psychological freedom and we must devote our energies to establishing the conditions necessary to facilitate the individual psychological experience of freedom within ourselves."

A possible solution may be to provide environmental contexts within the existing academic curriculum to allow students, especially adolescents, to relate themselves to personally significant standards with

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[6]George Isaac Brown ; Human Teaching for Human Learning, New York: The Viking Press, 1971, p. 298.

[7]Winfield Scott, "Human Freedom and the Counselor," Personnel and Guidance Journal, XLV (April, 1968), 777-81.

the emphasis placed on self-growth and self-improvement rather than emphasizing standards, as we now do, which are based largely on social, academic or athletic competition. If more self-evaluation and self growth environments, such as the one discussed in this study, were developed, increased confidence and self acceptance might be achieved during the school year experiences.

As an individual sees and recognizes growth in himself, he gains in security and sense of wellbeing. It is hoped that the findings of this study will contribute a positive influence on educators as they seek to develop in students general maturity and overall educational and environmental adjustment.

CHAPTER II

SURVEY OF RELATED LITERATURE

This literature survey begins with reviews of the measuring tool, of which there are many and ends with reviews of self-evaluation which have actually involved the subjects in the ongoing process of evaluation, of which there are very few. The paucity of research studies in this area is an indication that the acceptance of a principle and putting it into practice are often far apart.

Crites, et al[8] factor analyzed the California Psychological Inventory and identified four basic classes of personality clusters. These clusters disagree somewhat with Gough's[9] objective classification of the eighteen CPI scales into categories called measures of poise, ascendancy and self assurance; socialization, maturity and responsibility; achievement potential and intellectual efficiency; and intellectual and interest modes. Some of the scales, when factor analyzed, require regrouping into categories other than the original objectively assigned breakdowns.

A study by Mitchell and Pierce-Jones[10] agrees with the factor analysis findings of Crites, et al., and again concludes that some of the scales of the CPI have been misclassified by Gough. This study

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[8]John O. Crites, Harold R. Bechtoldt, Leonard D. Goodstein, and Alfred B. Heilburn, Jr., "A Factor Analysis of the California Psychological Inventory" Journal of Applied Psychology, XLIV (June 1961), 408 - 14.

[9]H. G. Gough, Manual for the California Psychological Inventory, (Palo Alto, California: Consulting Psychologist Press, Inc., 1957), 18-20.

[10]James V. Mitchell, Jr., and John Pierce-Jones, "A Factor Analysis of Gough's California Psychological Inventory," Journal of Consulting Psychology, XXIV, No. 5 (1960), 454 - 56.

found, however, that four scales account for sixty percent of the total variance indicating again that a shorter test might be devised.

In the Mitchell and Pierce-Jones[11] study, four factors were identified and tentatively named: adjustment by social conformity; social poise or extroversion; superego strength; and capacity for independent thought. Gough's[12] rebuttal to the factor analytic findings is that he grouped the scales for diagnostic convenience, not for factorial consistency.

It should be pointed out, as Nichols and Schnell[13] did in their study, that the differences in scale groupings are minor and that five of Gough's first six scales do constitute, consistently, a psychometric unit. The factor analytic studies of the CPI have made it possible to determine that, despite differences in ages, backgrounds and methods of analysis, the instrument has yielded remarkably similar findings. The findings of this study also support the previous factor analytic findings. This was encouraging since the earlier studies were with adults, college and high school students.

Personal discussions with the test's author have confirmed that a small amount of data is actually available for junior high school populations, and he has expressed an interest in this study for that reason. Mitchell and Pierce-Jones[14] have also suggested that scales grouped by

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[11] IBID.

[12] Gough, loc. cit.

[13] R. C. Nichols and R. R. Schnell, "Factor Scores on the California Psychological Inventory," Journals of Consulting Psychology, XXVII, (1963), 236 - 42.

[14] Mitchell and Pierce-Jones, loc. cit.

factor analysis could permit personality description in such psychological terms as "dominance," "self acceptance" and the like rather than such complex social behavior concepts as "social presence" and "capacity for status."

Brookover, Patterson and Shailer[15] directed their study efforts to determine whether or not the student's self-concept of his ability is a significant factor in his academic achievement. The major results of the study were that the self-concept of academic ability differs from measured intelligence when grade point average is partialled out; that self-concept of ability is a significant factor in achievement; and that self-concept of ability may vary from achievement area to achievement area. In addition, the authors stated that a student's self-concept of ability also is related positively to the image which he perceives significant others hold of him. These significant others for the most part are parents, teachers and peers.

Keimowitz and Ansbacher[16] found that the CPI differentiated significantly between achievers and underachievers in mathematics, and Lessinger and Martinson[17] found similar results using the CPI to compare gifted and average junior high students. Pierce[18] contrasted twenty-

[15]Wilber Brookover, Ann Patterson, and Thomas Shailer, Self-Concept of Ability and School Achievement (East Lansing: Michigan State University, 1962), p. 10.

[16]R. I. Keimowitz and H. L. Ansbacher, "Personality and Achievement in Mathematics," Journal of Individual Psychology, XVI, (1960), 84 - 87.

[17]L. M. Lessinger and Ruth A. Martinson, "The Use of the California Psychological Inventory with Gifted Pupils," Personnel and Guidance Journal, XXIX, (1961), 572 - 575.

[18]J. V. Pierce, "Personality and Achievement Among Able High School Boys," Journal of Individual Psychology, XVII, (1961), 102 - 107.

seven high and low achieving tenth grade boys and twenty-five high and low achieving twelfth graders and found that five CPI scales differentiated significantly on both comparisons; responsibility, tolerance, achievement via conformance, achievement via independence and intellectual efficiency. The three scales intended to relate to academic achievement functioned validly in Pierce's study. In the present study, the underdeveloped boys showed significant gains in all of the above mentioned scales except responsibility.

Gough[19] has used multiple regression techniques to derive predictive equations on the CPI for use in predicting academic achievement. Self-acceptance, responsibility, good impression (negative), achievement via conformance, achievement via independence, intellectual efficiency and psychological mindedness were the scales found to be most predictive of male academic achievement.

Pine and Boy[20] discussed achievement motivated behavior as a function of various forces exerted upon the individual. Rewards and punishment, support, encouragement and other reinforcements are techniques used by those who consciously or unconsciously see motivation as primarily a fact of establishing stimuli external to the individual that will elicit response. These investigators also pointed out that much educational practice is based largely upon the external stimulus - internal response notion of motivation. The individual is viewed as an organism to be made into something. According to this notion, students cannot

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[19]H. G. Gough, "Academic Achievement in High School as Predicted from the California Psychological Inventory," Journal of Educational Psychology, LV, No. 3, (1964), 174 - 180.

[20]Gerald J. Pine and Angelo V. Boy, "The Counselor and the Unmotivated Client," Personnel and Guidance Journal, XLIV (Dec. 1965), 368-71.

be trusted to decide what is good for themselves; someone else (the curriculum maker) must decide. Other people (teachers and administrators) then determine what forces will be exerted to keep students moving through this "good experience."

Pine and Boy,[21] along with earlier authors, Kelley,[22] Maslow,[23] and Rogers,[24] have all pointed out, in studies of differing types of age groups, that people are always motivated. In fact, they are never unmotivated. Pine and Boy[25] stress that the predominate direction is toward health and growth.

Man has a built-in will to health; a need to become fully functioning or selfactualizing. It is the intent of this study to show that individuals do have a basic internal desire to grow that does not have to be imposed by any external agent.

Pine and Boy[26] have observed young children have their language characterized by "let me." Often, however, by being denied this request an essential part of his selfhood becomes relegated to a secondary position in deference to the rational, cognitive elements of life. Spontaneity becomes controlled; often so controlled that it is stultified.

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[21] IBID.

[22] E. C. Kelley, The Workshop Way of Learning (New York: Harper and Row Book Company, 1951).

[23] A. H. Maslow, Motivation and Personality (New York: Harper and Row Book Company, 1954).

[24] Carl R. Rogers, Client Centered Therapy (Boston: Houghton Mifflin Company, 1951).

[25] Pine and Boy, loc. cit.

[26] IBID.

People become afraid to be themselves. They are taught indirectly they cannot trust themselves. They gradually build their life on the expectations of others. Many lose their individuality and essences as persons because of having been told so often "what to do," "when to do it," "where to do it," "how to do it," and "why to do it."

By the time a child enters the period of adolescence, he has been taught to rely less and less on his internal capacity for growth. Relationships with peers, the perceptions and evaluations of parents and other adults, his role in the culture of his community and society, and his classroom experiences, rather than fostering growth, really act to limit the opportunities for growth and feed the self concept of inadequacy, failure and incompetence. Perceptual malnutrition, the illness of not growing, results. The will-to-health drive, the thrust to growth is blocked. The growth potential is covered so that it no longer progresses.

Gronlund[27] found that an adolescent's own sense of adequacy and competence, based on things they can do, result in increased self-awareness during these years. The individual's physical and social characteristics affect others' responses to him, and this in turn influences his concept of himself. Several investigations have supported the hypothesis that a positive relation exists between acceptance of self and acceptance of others.

The present study sought to eliminate, as much as possible, the pressures of the expectations of others and to allow for freedom of growth through self-awareness and self-trust.

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[27] Norman E. Gronlund, "Sociometric Status and Sociometric Perception," Sociometry, XVIII, (May, 1955), 122 - 128.

Reutzel and Reutzel[28] concluded on the basis of their study that students who succeed academically do not do so in an intellectual vacuum; rather they do so while intending and interacting with non-intellectual circumstances. Personal and social psychologists have been concerned with discovering which personality traits affect academic achievement. There is an increasing realization that non-intellective factors must be assessed in order to diminish the margin of error in the prediction of intellectual achievement.

Early investigators found only negligible relationships between personality tests and grade averages with slight tendencies on the part of high achievers toward introversion, dominance and self-sufficiency. Gough[29] suggested that the lack of significant results in studies using personality tests might be explained by the fact that the investigators used scales devised for predicting problems of a clinical or psychiatric nature which had little relationship to variables relevant to academic achievement. This prompted him to devise a more accurate measure for "normal" personalities by selecting items from The Minnesota Multiphasic Personality Inventory in a manner so as to minimize the overt connections with intelligence and pathology. His scale revealed that superior achievers were more conventional in conforming, more apprehensive and more self confident.

In 1957, these findings were incorporated by Gough[30] into The

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[28]Flaherty Reutzel and Eileen Reutzel, "Personality Traits of High and Low Achievers in College," The Journal of Educational Research, LVIII (May - June 1965), 408 - 411.

[29]H. G. Gough, "A New Dimension of Status: I. Development of a Personality Scale," American Sociological Review, IX, (1954), p. 559.

[30]Gough, loc. cit.

California Psychological Inventory, a 480 item true-false instrument devised to measure eighteen personality traits. The CPI is structured as a test for "normalcy" and is intended for non-clinical use. The ultimate goal, in the words of the test manual, is to "develop descriptive contents which possess broad personal and social relevance with characteristics of a wide and coercive adaptability to human behavior and related favorable and positive aspects."

MacKinnon[31] found that no special controls or restrictions were necessary for valid administration of the CPI. Subjects may begin at one session and finish at another. The items of the CPI may be read aloud or explained if questions are asked. Completion of the test may occur under either supervision, or a subject may be allowed to work on his own. MacKinnon has also utilized the inventory of a mail-out/mail-in basis with successful results. The findings verify the statements made in the CPI manual.

Reutzel and Reutzel[32] related that the CPI scales for measures of achievement potential and efficiency differentiated significantly between the high and low achievers. Further analysis, they stated, showed that the scores of four scales of the poise, ascendancy and self-assurance trait scales were significantly higher for high achievers. The traits identified were the dominance, capacity for status, sociability and self acceptance. The responsibility and tolerance scales from the socialization, maturity and responsibility trait section were

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[31] D. W. MacKinnon, "The Personality correlates of Creativity: A Study of American Architects." In G. H. Nelson (Ed.) Proceedings of the XIV International Congress of Applied Psychology, Copenhagen, 1961, (Copenhagen: Munksgaard, 1962), Vol. II, 11 - 39.

[32] Reutzel and Reutzel, loc. cit.

also significant for high achievers.

They concluded, therefore, that certain attributes about and towards the self are more directly related to high achievement than those variables which measure a more social nature such as good impression and commonality. They suggested that on the basis of their study, certain CPI scales can be used as non-academic predictors of academic achievement. Ten of the eighteen CPI scales are listed as usable. These are dominance, capacity for status, sociability, self-acceptance, responsibility, tolerance, achievement via conformance, achievement via independence, intellectual efficiency and femininity.

Semler[33] found that in general earlier studies also indicated there exists a significant difference in the degree of academic achievement between groups of well-adjusted and poorly-adjusted school children. Specifically, the achieving students have a more adequate level of both personal and social adjustment than the underachieving students.

Ringness[34] found significant self concept differences existed between groups of secondary students. When the mean subpart scores were compared, all students tend to score somewhat below the norms with regards to the traits relating to personal freedom and feelings of belonging.

These findings and others such as Jackson and Pacine[35] indicated

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[33] J. Semler, "Relationships Among Several Measures of Pupil Adjustment," The Journal of Educational Psychology, LI (1960), 60 - 64.

[34] Thomas A. Ringness, "Emotional Adjustment of Academically Successful and Non-Successful Bright Ninth Grade Boys," The Journal of Educational Research, LIX (October, 1965), 88 - 91.

[35] D. N. Jackson and L. Pacine, "Response Styles and Academic Achievement," Educational and Psychological Measurement, XXI (1961), 1015 - 1028.

that even bright children experience deflated feelings of self-worth when compared competitively to other people. Bartl and Peltier have said that implicit in much of the maladjustment of the underachiever seems to be the problem of a weak or inadequate self concept...examination of the case studies of numerous underachievers reveals that the average underachiever sees himself as inadequate, helpless, worthless and inferior. This weak self concept, this low degree of self regard, moreover, generally, is conceded to be indicative of, related to, and/or a cause of maladjustment.

Eames[37] explained that the adolescent is at loose ends; he is faced with an uncertain future just as his predecessors have been, only more so, and he sees himself hedged in by those people and situations.

King[38] found it to be important to recognize that for a variety of reasons many youth today are strictly present-oriented. They are concerned with immediate gratification and think little about the future. The study shows that school dropouts' goals were immediate, personal and of a materialistic nature. An example of immediate needs used in the study was that young people today need to be up-to-date with the latest clothing fads and hairstyles. How the youngster sees himself may or may not be expressed in a way that both he and those attempting to assure him can understand. Many very present-oriented youths have a negative

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[36] Charles P. Bartl, and Gary L. Peltier, "The Academic Underachiever in an Industrialized World," School and Society, Vol. 99 No. 2330, Jan. 1971, p. 24 - 26.

[37] Thomas H. Eames, "Attitudes and Opinions of Adolescents," Journal of Education (Boston University School of Education), CXLVII, (April, 1965) 96 - 101.

[38] Melvin H. King, "Attitudes and Opinions of Adolescents," Journal of Education (Boston University School of Education), CSLVII, (April, 1965) 107 - 116.

or poor self-image. Bartl and Peltier[39] affirmed that many underachievers perceive themselves as generally inadequate or as incapable in certain subject matter areas, and then proceed to behave in ways consistent with those beliefs so that they, in fact, become inadequate achievers. Hayakawa[40] calls this the self-fulling prophecy--a process whereby we consciously or unconsciously in some instances behave in ways which ensure results which are in harmony with our expectations.

In the King[41] study of dropouts and students still in school, it was found that individuals with well defined and positive self images had on the whole clearly defined goals and were more concerned with their future. Those individuals with a negative self image had fewer or less well defined goals and these were in general more immediate and materialistic in nature. He concluded that the individual's conception of himself is then a basic determinant of the formulation of goals. More thought needs to be given to the ways we teach students and the effect methods have on self-image. Students need to be able to view school subjects as providing for more personal awareness of growth than they presently experience. Bartl and Peltier[42] also said the frustration induced by failure makes some people try wildly and foolishly to do anything to correct their failure; others are inhibited and tend to become apathetic and do nothing to avoid further failure. The end result may be decreased ability in perception, judgment and mental functioning in general.

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[39] Bartl and Peltier, loc. cit.

[40] S. I. Hayakawa, Symbol, Status, and Personality (New York: Harcourt, Brace and World, 1964), p. 71.

[41] King, loc. cit.

[42] Bartl and Peltier, loc. cit.

Keller and Rowley[43] related that personality theorists and educators have shown considerable interest in the discrepancy between potential and actual performance. They have generally indicated that all personality attributes, but especially anxiety, are significant factors in producing this discrepancy. There is, however, a paucity of studies concerning the variables thought to be relevant to this discrepancy factor. There is an extreme lack of developmental data regarding the interrelationships of variables over an extended age period. Putney and Putney[44] stated that the adjusted American lacks self-approval; that is to say, he has not developed a self-image that he can believe is both accurate and acceptable. To do so he would require successful techniques for creating an accurate and acceptable self-image through honest introspection, candid association, and meaningful activity. The patterns to which he has adjusted do not include such techniques. Instead, the culture abounds with misdirections, which the adjusted American acquires.

Keogh and Benson[45], whose study was a part of a systematic attempt to isolate those variables which are relevant to learning disorders, investigated biological, psychological and sociological variables. They attempted to describe certain specific motor characteristics of under-

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[43] E. Duwayne Keller, and Vinton N. Rowley, "The Relations Among Anxiety, Intelligence and Scholastic Achievement in Junior High School Children," Journal of Educational Research, LVIII, (December, 1964), p. 167 - 173.

[44] Snell Putney, and Gail J. Putney, The Adjusted American: Normal Neuroses in the Individual and Society, Harper and Row, Publishers Inc. New York, 1964, 210 p.

[45] Jack Keogh, and David Benson, "Motor Characteristics of Underachieving Boys," Journal of Educational Research, LVII, (March, 1964), 339 - 344.

achieving boys of adequate intelligence which differed significantly from normative data in relation to the biological, psychological and sociological variables. They found that most available studies were concerned mostly with physical and growth measurement and it is directed to the relationship of variability and physical measurements in academic achievements. Inability to participate successfully in physical activities within peer groups provided another area of general failure which occupies a position of considerable importance during middle childhood. Putney and Putney[46] also state that in a similar vein, lack of talent seldom presents a real barrier to activity--the person who demurs, pleading lack of ability, is focused on the judgment others may pass on his efforts, not on his potential enjoyment. ...His perception of his capacities is distorted by his quest for indirect self-acceptance. He is inhibited by fear of failure, not by a total lack of capacity. It is not that he cannot, but rather that he cannot excel.

The Keogh and Benson[47] study stated that if generalized failure is a central problem in children with learning disorders, that one-half of the boys in their study seemed destined to compound their current learning disorders with problems they have in terms of physical performance failures.

Sines[48] studied the possibilities that the information available to psychologists through tests and other resources could enable him to make judgments and descriptive and diagnostic statements about subjects.

[46] Putney and Putney, loc. cit.

[47] Keogh and Benson, loc. cit.

[48] L. K. Sines, "The Relative Contribution of Four Kinds of Data to Accuracy in Personality Assessment," Journal of Consulting Psychology, XXIII, (June, 1959), 483 - 492.

Desoto and Kuethe[49] studied the phenomenon which seems to be operative when items are difficult or ambigious enough to arouse the operation of a response set. The findings of the study indicate, however, that set was essentially absent as a factor on the personality scales studied.

Ellis[50] said that there are probably no absolutely necessary conditions for constructive personality change to occur, and his study seemed to substantiate his contention. This finding was interesting since proponents of many schools of psychotherapy have assumed without empirical data that certain conditions were necessary. Brown[51] pointed out that for a long time we have known the importance of personal involvement in learning. Educational psychologists have, however, expressed this negatively: "If learning has no personal meaning, it will not change behavior." Seldom has the converse been stated: "If we add an emotional dimension to learning, the learner will become personally involved and, as a consequence, there will be change in the learner's behavior."

Accepting the hypothesis that the nature of test items influence the response set, Hanley[52] explored the possibility that there are

[49]Clinton B. Desoto, and J. L. Keuthe, "The Set to Claim Undesirable Symptoms in Personality Inventories," Journal of Consulting Psychology, XXIII, (June, 1959), 496 - 500.

[50]Albert Ellis, "Requisite Conditions for Basic Personality Change," Journal of Consulting Psychology, XXIII, (June, 1959), 538-540.

[51]Brown, loc. cit.

[52]Charles Hanley, "Responses to the Working of Personality Test Items," Journal of Consulting Psychology, XXIII, (June, 1959), 261 - 265.

different "acquiescences" to specific types of item wordings. He concluded after his study that the "acquiescent personality" requires considerable more study before findings about attention to item wordings can be accepted as definitive.

Canter[53] investigated the ability of a short-form MMPI to differentiate as successfully as the long form using all scales and found that the short-form was as efficient as the more ordinarily used long form. A similar study of the CPI should be made.

Using Erickson's[54] statement that "the sense of ego identity is the (individual's) accrued confidence that (his) inner sameness and continuity are matched by the sameness and continuity of (his) meaning for others," Block[55] hypothesized that excessive role variability (diffusion) and insufficient role variability (rigidity) would reflect problems in ego identity and be associated with maladjustment. Only role variability proved to be associated with maladjustment.

Putney and Putney[56] state that in large measure, the sense of being under pressure is a result of the quest for indirect self-acceptance. As the adjusted American is caught up in this misdirected pursuit, most of what he does is undertaken for the effect it will have on other people. Thus, he imposes on himself a constant concern with what he thinks

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[53]Arthur Canter, "The Efficiency of a Short Form of the MMPI to Evaluate Depression and Morale Loss," Journal of Consulting Psychology, XXIV (1960), 14 - 17.

[54]E. H. Erickson, Childhood and Society (New York: W. W. Norton and Company, Inc., 1950), p. 228.

[55]Jack Block, "Ego Identity, Role Variability and Adjustment," Journal of Consulting Psychology, XXV (1961), 392 - 97.

[56]Putney and Putney, loc. cit.

other people think he should be doing, or how other people evaluate what he has done. Such misplaced concern underlies his sense of endless striving leading nowhere--which is approximately where his efforts do lead. No matter how hard he works at it, he will never arrive at self-acceptance by doing things to impress other people.

Washburn[57] investigated the effect of body build and family situation on personality self-concepts. The analysis of variance method used indicated that physique did not have a significant effect on self-concept.

Studies of overall personality development, as measured by the CPI, at various ages have been made by McKee and Turner,[58] Mussen,[59] Mussen and Jones,[60] Payne and Mussen,[61] and Sears[62]. Studies of scholastic achievement have been reported by Gough,[63, 64]

[57]Wilbur C. Washburn, "The Effect of Physique and Intra-family Tension on Self-Concepts in Adolescent Males," Journal of Consulting Psychology, XXVI (1962), 460 - 66.

[58]J. P. McKee, and W. S. Turner, "The Relation of Drive Ratings in Adolescence to CPI and EPPS Scores in Adulthood," International Journal of Human Development (Vita Humana), IV (1961), 1 - 14.

[59]P. H. Mussen, "Long Term Consequences of Masculinity of Interests in Adolescence," Journal of Consulting Psychology, XXVI (1962), 435 - 440.

[60]P. H. Mussen, and M. C. Jones, "Self Conceptions, Motivations and Interpersonal Attitudes of Late and Early Maturing Boys," Child Development, XXVIII (June 1957), 243 - 256.

[61]E. E. Payne, and P. H. Mussen, "Parent - Child Relationships and Father Identification Among Adolescent Boys," Journal of Abnormal Psychology, LII (1956), 358 - 362.

[62]R. R. Sears, "Relation of Early Socialization Experiences to Aggression in Middle Childhood," Journal of Abnormal Social Psychology, LXIII (1961), 466 - 492.

[63]H. G. Gough, "Factors Relating to the Academic Achievement of High School Students," Journal of Educational Psychology, XL (1949).

[64]H. G. Gough, "What Determines the Academic Achievement of High School Students?" Journal of Educational Research, XLVI (1953).

and Pierce-Jones[65].

In comparing self-evaluation to external evaluation, Rogers[66] has stated that;

> "As we have struggled with this problem of grades and academic bookkeeping, and have contrasted it with those experiences in which the students are free to evaluate themselves, we have reached the conclusion which to some will seem radical indeed. It is that personal growth is hindered and hampered, rather than enhanced, by external evaluation."

Russell[67] has also pointed out a problem in this area of evaluation, he said;

> "Although self-evaluation has been commonly accepted on the verbal level, it seems to be rare on the action level. ...This lack of emphasis upon self-evaluation in the school's appraisal program may be due to indifference, lack of knowledge, or difficulties in using a procedure unsuited to elementary and secondary school pupils and current school practices. ...The glib statement that self-evaluation is an important part of all evaluation programs would seem to need both further investigation and extreme caution in its application."

Some additional comments on educational practice in this area were given in this analysis by Arsenian[68].

> "The progressive development of reality on the part of the individual is one of the major aims of education. By sense of reality is to be

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[65] J. Pierce-Jones, "Social Mobility Orientations and Interests of Adolescents," Journal of Counseling Psychology, VII (1961), 75 - 78.

[66] Carl R. Rogers, op. cit. p. 417 - 18.

[67] David H. Russell, "What Does Research Say About Self-Evaluation?" Journal of Educational Research, XLV, (April, 1953), 564.

[68] Seth Arsenian, "Own Estimate of Knowing College Aptitude Test Scores," Journal of Educational Psychology, XXXIX, (September, 1945), 25 - 32.

> understood not only the correct evaluation of physical and social forces in our environment but also a close estimate of abilities, knowledges, interests and adjustments of the individual himself. ...It would seem that this systematic introduction of the student to himself should ... constitute one of the criteria on which to base a judgment of the success or failure of the guidance program."

Strang[69] has said; adolescence should be viewed as an opportunity.

> ...He may, in an environment where he feels understood and accepted, learn that the whole world is not necessarily bent on defeating him. ...Even though he has developed an attitude of hopelessness and defeatism, he may gradually achieve a measure of self esteem by experiencing success in some corner of his life.
> ...The happy adolescent is the one who feels that, despite some ups and downs, he is achieving maturity.

Brown[70] stated that the ideal pedagogical condition is where a learner fully possessed of feelings of personal adequacy as an explorer in the universe of experience, finds the adventure of a new experience a prospect of challenge and excitement. Thus he learns. And he thirsts for yet more experience. He feels more alive when he is learning, whether what he learns is pleasant or unpleasant. This kind of vitalized learning involves both affective and cognitive dimensions. That is, the learner learns as a whole person, with both mind and feeling.

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[69]Ruth Strang, An Introduction to Child Study, Fourth Edition. (New York: The MacMillian Company, 1959), p. 511 - 512.

[70]George Isaac Brown, Human Teaching for Human Learning, (New York: The Viking Press, 1971) p. 233.

Darling[71] developed a self appraisal plan where eighth grade pupils obtained information about themselves through a series of interest, ability, and achievement "inventories." The results were explained to the pupils, who were encouraged to take an objective, acceptant attitude toward themselves. They also began to relate their self-concepts to the realities of educational and vocational opportunities.

In a study of students in electronics communications courses, lasting for twenty weeks, Duel[72] found that the students involved in self-evaluation of their progress scored higher than students not involved in self-evaluation on all nine of the measures used as final evaluations of the course. The difference was significant on five of the nine measures. Duel's study concluded that students given opportunities to self-evaluate can achieve a greater degree of learning than those not having that opportunity.

Studying sixth grade boys Williams and Cole[73] hypothesized that a child's conception of school would be related to his self-concept. Significant positive correlations were found between self-concept and social status at school, emotional adjustment, mental ability, reading achievement and mathematical achievement. The authors suggested that one approach toward enhancing social status might be the structuring of group activities so that the child is permitted to demonstrate a particular skill before his fellow students.

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[71] Robert J. Darling, "Student Readiness: Foundations for Student Guidance," Journal of the National Association of Deans of Women, XVIII, (October, 1954), 33 - 39.

[72] Henry J. Duel, "Effect of Periodical Self-Evaluation on Student Achievement," Journal of Educational Psychology, XLIX, (June, 1958), 197 - 99.

[73] Robert L. Williams and Spurgeon Cole, "Self-Concept and School Adjustment," Personnel and Guidance Journal, XLVI (Jan. 1968) 478-81 .

Van Kaughnett and Smith[74] pointed out that several studies have indicated that there is a low but positive relationship between feelings of selfworth and school functioning. Many school deficiencies are now thought to be due to the child's belief that he cannot read, write or do arithmetic. Thus, for a child to achieve, he must view himself as able to achieve.

Grambs[75] stated that a child with a negative self-concept will not profit much from school and Kvarceus[75] believes that the school should take an active role in enhancing the self-concept of minority children, but he goes on to point out that research on how to effect such change is lacking.

Many published studies use the terminology "self-evaluation" in their titles, very few, however, involve the subjects of the study in the process of an ongoing self-evaluation. Most of the studies were a one time estimate of the possession of some particular attribute. The degree of accuracy of that estimate made by the subjects is then verified by the investigator by using some sort of evaluative instrument, but the subject is rarely involved in the evaluation process.

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[74] B. C. VanKaughnett and Merle E. Smith, "Enhancing The Self-Concept in School," Educational Leadership, XXVII (December, 1969), 253 - 55.

[75] W. C. Kvaraceus, J. D. Grambs and Others, Negro Self Concept: Implications for School and Citizenship. Washington, D. C.: U. S. Department of Health, Education and Welfare, U.S. Office of Education, 1964.

SUMMARY

The studies reviewed in this survey of related research cover four areas that pertain, at least in part, to the current study. There are factor analytic studies covering the findings of other researchers who also studied The California Psychological Inventory. Their findings and the findings presented in this study are very harmonious. The second general category of studies reviewed were related to investigations of non-intellective factors and academic achievement. Studies of this nature were reported because of the assumption that the findings of this study may be generalized to more academically oriented subject matter.

A third category of studies reviewed in this chapter related to the more general overall area pertaining to adolescent adjustment itself. These investigations and assumptions were used to develop a background against which to evaluate and understand the boys being studied. The final type of information reviewed was related to the topic of self-evaluation and learning environments. These reviews were more theoretical than experimental, but it was on the basic assumptions of such investigations that the design of this study was originally built. The studies covered in this review are not exhaustive, but rather were considered as illustrative in developing a base for this study.

CHAPTER III

THE DATA AND THE TREATMENT OF THE DATA

THE PROBLEM RESTATED

This study evaluated the self-concept differences of junior high school boys based on two administrations of a standardized personality test. The boys were underdeveloped, late maturing adolescents who were placed in a special physical education program where self-evaluation was stressed. They were first tested before the program began and tested again eight months later at the end of the program.

THE SOURCES OF THE DATA

The data used in this study were of two types, physical and psychological, and were gathered with three different instruments. The physical measurements were gathered using the National Physical Fitness Test[76] and a self-evaluation record form developed for this study (Appendix D). The psychological data, in the form of personality profiles, were gathered using the California Psychological Inventory,[77] a 480 item personality test designed for use in educational, rather than clinical or psychiatric, settings. During the first two weeks of the school year, the underdeveloped and athlete subgroups were identified, and the personality measure was administered to both groups.

The large subgroups were divided into small groups of twelve for the administration of the test. Two school periods for each small group were required to complete the testings. The two main subgroups were readministered the CPI two weeks before the end of the spring term.

[76] AAHPER, loc. cit.

[77] Gough, loc. cit.

THE USE OF A NONEQUIVALENT CONTROL GROUP

Due to restrictions by the school a standard-type control group could not be used. Therefore, a design using a nonequivalent control group was used. This allowed for comparisions of the status of the groups after the treatment with their status before treatment. It also provided some idea of whether changes had been wrought by the experimental treatment by comparisons with the nonequivalent control group. The design has the weakness, however, that since the groups were not randomly selected from the same population, it is not possible to infer that differences are necessarily due solely to treatment effects.

DESCRIPTION OF THE FITNESS TEST MEASURES

The basic test battery measured strength, flexibility and agility. Pullups, sometimes called chinups, were used to measure arm and shoulder strength; situps measured flexibility and abdominal strength; and squat thrusts were used to measure agility. Cardiorespiratory endurance was also tested using a half-mile run.

Using the fitness test[78] directions, the boys taking the test were divided into pairs. One boy acted as scorer while his partner performed each test. Each boy alternated as scorer and participant. After each test was completed, the results were recorded on an official record form by the physical education instructor.

The only equipment required for the fitness test was a chinning bar, a stopwatch and the required record forms. The chinning bar was adjustable to various heights so that the boys were individually able to jump up and grasp the bar with their feet hanging slightly off the floor. Boys of ages 10 - 13 had to do at least one pullup to pass the subtest.

[78] AAHPER, loc. cit.

The situp exercise required the participant to lie on his back with his legs fully extended; feet about one foot apart and the hands, with fingers interlaced, were grasped behind the neck. The other member of the pair held the participants ankles to keep his heels in contact with the floor and counted the successful situps. A situp was successful when the action was, situp; turn the trunk to the right or left; touch the opposite knee with the elbow and return to the starting position. A situp was complete when the participant returned to the starting position. To pass this test, boys of ages 10 - 17 were required to do a minimum of fourteen situps.

The squat-thrust test was the third mandatory test administered. The action involved in this test was to bend the knees and place the palms of the hands on the floor in front of the feet. The legs were then thrust backward to assume the pushup position. The participant must then return to the squat position and stand back to a position of attention. The boys were instructed verbally and by example from the physical education instructors about the proper way to do squat-thrusts. The boys were then instructed to do as many squat-thrusts as possible in a ten second period after the starting signal of "go" was given. The non-participating member of each pair counted the completed squat-thrusts. At the end of ten seconds the command from the instructor was "stop." For boys 10 - 17 years, four squat-thrusts were required in ten seconds to pass the test.

THE PROCESS FOR GATHERING PERSONALITY DATA

The California Psychological Inventory[79] was administered to both the underdeveloped boys and the athletes in small groups. The test

[79] Gough, loc. cit.

groups to which the underdeveloped boys were assigned were the groups they would be with for participation in the special physical education program designed for this study. These groups ranged in size from twelve to fifteen boys. The test sessions took place on two days for each group. Part of the groups met on Monday and Wednesday and the remainder met on Tuesday and Friday. Due to the shortness of the time allotted for each class session and length of the CPI, the necessity for two sessions was created. The CPI Manual[80] says that this is a procedure that has no adverse effect on the test results. This procedure was also adopted on the basis of MacKinnon's[81] findings mentioned earlier in this paper.

The post-test personality data were gathered in the same way during the final weeks of the spring school term. The athletes were tested in the same fashion, but in separate sessions from the underdeveloped boys.

The underdeveloped boys were then assigned to a special physical education program designed to involve the 128 boys in a self-evaluation environment. After the program started physical measurements, in addition to those from the Physical Fitness Test, were made for all the underdeveloped boys.

The following additional measurements were made on each boy during the first class meeting:

Height in Inches

Weight in Pounds

Circumference of the Right Bicep

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[80] IBID

[81] MacKinnon, loc. cit.

Circumference of the Left Bicep

Circumference of the Neck

Chest - Normal in Inches

Expanded in Inches

Circumference of Waist

Circumference of the Right Thigh

Circumference of the Left Thigh

Circumference of the Right Calf

Circumference of the Left Calf

A series of strength tests were also made which became the baseline data for the underdeveloped boys to compute their growth from. This battery was composed of the following measurements:

- The amount of weight each boy could do at least one bench press with
- The amount of weight a boy could do a standing press with
- The number of chinups that could be done behind the neck
- A reverse curl trial
- A dips trial (a kneebend with a weight bar on the shoulders)
- Pushups
- A jump from a standing position. (a boy should be able to jump forward for a distance at least equal to his own height).

The boys worked in pairs for these tests just as they had in the Physical Fitness Test. One boy acted as recorder when his partner was the participant.

Each boy was told that he had access to his own checklist at any time

he wished to see it or to test himself. The emphasis of the comparisons from this time on in the program was on self-growth, not competitive achievement against other class members. The discussions of progress were made in terms of how much personal increase a boy had made and not about how the participant compared with others. This sort of self-comparison was encouraged by the instructor by acknowledging the discussion of personal gains and by discouraging competitive comparisons by saying, when such comparisons were made, "That's interesting, but what difference does it really make? Show me how much you gained." By the third testing session it was rare to hear any competitive discussions. Conversations centered around the amount of personal gain being experienced.

SPECIAL TREATMENT GROUP AND REDUCTION IN ORIGINAL SAMPLE

A random sample of thirty boys from the underdeveloped group were selected to receive additional encouragement from the instructor in the form of pointing out and commending all growth that the boy experienced. The other underdeveloped boys were given their record forms at each testing session, but did not receive special encouragement except as they initiated a discussion with the instructor.

Of the two hundred and eight boys tested in the fall, only one hundred and fifty-five were available for retesting in the spring. One hundred and twenty-eight were from the underdeveloped group. The major reason for the population reduction was caused by the opening of a new junior high school at the end of the first half of the school year.

This school had originally been scheduled to open earlier, but due to construction problems had been delayed and school officials in the

fall did not anticipate its availability during the entire school year. The original assignment of boys to the special program was made based on these assumptions.

The underdeveloped boys who lived in the area serviced by the new junior high school left the experimental program at this point. The same population reduction was experienced in the athlete subgroup and the boys receiving special encouragement. Only twenty-seven athletes were available for the second testing and of the original thirty boys in the special encouragement subgroup, twenty-one were still in the program for retesting in the spring.

DETAILED DESCRIPTION OF THE PERSONALITY MEASURE

The following brief descriptions of the individual scales of the CPI were used to aid in the interpretation of the personality profiles found in this study. The descriptions are from earlier studies by Gough[82]. The scales will be discussed according to the major classes that Gough has assigned to them in the CPI manual.

Class I. Measures of poise, ascendancy and self-assurance.

Do (Dominance) (46 items). Purpose: To access factors of leadership ability, dominance, persistence, and social initiative. Trait equivalent: DOMINANCE - indicating dominance, leadership, initiative and the tendency to behave in a forthright and resolute manner.

Cs (Capacity for Status) (32 items). Purpose: To serve as an index of an individual's capacity for status

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[82]Gough, loc. cit.

(rather than of his actual or achieved status). The scale attempts to measure the personological qualities and attributes which underlie and lead to status.

Trait equivalent: CAPACITY FOR STATUS reflecting the personal qualities which underlie and lead to status and social status and social attainment; being ambitious, forceful and interested in success; the kind of person who will get ahead in the world.

Sy (Sociability) (36 items). Purpose: To identify persons of outgoing, sociable, participating temperament. Trait equivalent: SOCIABILITY - indicating a liking for and interest in social life and activity, being outgoing and sociable; the kind of person who enjoys group activities and likes to be with and work with other people.

Sp (Social Presence) (56 items). Purpose: To assess factors such as poise, spontaneity and self-confidence in personal and social interaction. Trait equivalent: SPONTANEITY - indicating factors such as poise, spontaneity, self-confidence and vivaciousness in personal and social interaction.

Sa (Self-Acceptance) (34 items). Purpose: to

assess factors such as sense of personal worth, self-acceptance and capacity for independent thinking and action. Trait equivalent: SELF-ACCEPTANCE - reflecting one's sense of personal worth and satisfaction with one's self; relative freedom from self-doubt and critical attitudes about one's self.

Wb (Sense of Well-Being) (44 items). Purpose: To identify persons who minimize their worries and complaints, and who are relatively free from anxiety and disillusionment. Trait equivalent: SENSE OF WELL BEING - indicating a sense of physical and emotional well-being and comfort; the feeling of being able to enjoy life.

Class II. Measures of socialization, maturity and social responsibility.

Re (Responsibility) (42 items). Purpose: To identify persons of conscientious responsible and dependable disposition and temperament. Trait equivalent: RESPONSIBILITY - indicating seriousness of thought and manner, conscientiousness, dependability and uprightness; being the kind of persons that others tend to trust and to rely upon.

So (Socialization) (54 items). Purpose: To in-

dicate the degree of social maturity, probity and rectitude which the individual has attained. Trait equivalent: PROPRIETY - indicating a strong sense of propriety; acceptance of rules, proper authority and custom; a person who seldom if ever gets into trouble.

Sc (Self-Control) (50 items). Purpose: To assess the degree and adequacy of self regulation and self-control, and the freedom from impulsivity and self-centerdness. Trait equivalent: SELF-CONTROL - indicating the degree and adequacy of self-regulation and self-control; not impulsive or given to acting on the spur of the moment.

To (Tolerance) (32 items). Purpose: To identify persons with permissive, accepting and non-judgmental social beliefs and attitudes. Trait equivalent: TOLERANCE - indicating attitudes of permissiveness, tolerance and acceptance of others; being open-minded and unprejudiced about beliefs and values quite different from one's own.

Gi (Good Impression) (40 items). Purpose: To identify persons capable of creating a favorable impression and who are concerned about how others react to them. Trait equivalent: GOOD IMPRESSION - indicating an interest in making a good

PENDENT ACHIEVEMENT - indicating the kind of person who has a strong need for achievement and who is at his best in new or untried situations where he must work on his own and without external guidance.

Ie (Intellectual Efficiency) (52 items). Purpose:[8] To indicate the degree of personal and intellectual efficiency which the individual has attained. Trait equivalent: INTELLECTUAL EFFICIENCY - indicating the efficiency with which one uses intellectual and personal resources; the ability to start working quickly, without need to delay or procrastinate and to keep working on intellectual tasks over long periods of time.

Class IV. Measures of personal orientation and attitudes toward life.

Py (Psychological-Mindedness) (22 items). Purpose: To measure the degree to which the individual is interested in, and responsible to, the inner needs, motives, feelings and experiences of others. Trait equivalent: SENSITIVITY TO OTHERS - indicating the degree to which one is interested in and responsive to the inner needs, motives, and feelings of others, being intraceptive, sensitive to others; having a knack for understanding how others feel and react inwardly.

impression and being concerned about how others will react to oneself.

Cm (Communality) (28 items). Purpose: To indicate the degree to which an individual's reactions and responses correspond to the model ("common") pattern established for the inventory. Trait equivalent: SIMILARITY TO OTHERS - indicating a fitting in with the crowd, having the same reactions and feelings as everyone else, seeing things the way most people see them.

Class III. Measures of achievement potential and intellectual efficiency.

Ac (Achievement via Conformance) (32 items). Purpose: To identify those factors of interest and motivation which facilitate achievement in any setting where conformance is a positive behavior. Trait equivalent: ADAPTIVE ACHIEVEMENT - indicating someone with a strong need for achievement, and who is at his best in situations having definite rules and structure.

Ai (Achievement via Independence) (32 items). Purpose: To identify those factors of interest and motivation which facilitate achievement in any setting where autonomy and independence are positive behaviors. Trait equivalent: INDE-

Fx (Flexibility) (22 items). Purpose: To indicate the degree of flexibility and adaptability of a person's thinking and social behavior. Trait equivalent: FLEXIBILITY- indicating the degree of flexibility and adaptability of a person's thinking and social behavior; the liking for change and innovation and even a preference for things new and untried.

Fe (Femininity)(38 items). Purpose: To assess the masculinity or femininity of temperament (high scores more feminine, low scores more masculine). Trait equivalent: NURTURANCE - indicating the tendency to help and support others through patience and loving kindness; being in general gentle and sympathetic. (Low scorers tend to be more decisive, robust and action-oriented).

A DETAILED STATEMENT OF THE METHODOLOGY FOR EACH SUBPROBLEM

Subproblem 1. The first subproblem was to identify and personality factor clusters, as revealed by a standardized personality measure for the underdeveloped boys and the athlete subgroups in the urban junior high school investigated in this study.

Hypothesis 1. Prior to involvement in an experimental physical development program underdeveloped junior high school boys, as a group, do not differ significantly in self-concept from junior high school

athletes as shown by personality profiles on The California Psychological Inventory.

THE DATA NEEDED

The data needed for this subproblem were the results of factor analysis matrices. This information was computed on an IBM 7094 Computer located at the Western Data Processing Center (WDPC) at the University of California at Los Angeles.

THE TREATMENT OF THE DATA

Factor analysis has become the generic term for a variety of procedures developed for the purpose of analyzing the intercorrelations within a set of variables. The variables may be test scores, test items, questionnaire responses, etc. The reason for doing this is to determine the minimum number of independent dimensions needed to account for most of the variance in the original set of variables. The "construct-seeking" task of factor analysis is most frequently accomplished by conducting a principal-components analysis. The Varimax rotation system is used by the WDPC computer. This system computes the variance of the squared factor loadings using the following formula:

$$V = \left[m \Sigma(b_{ij}^2)^2 - (\Sigma b_{ij}^2)^2 \right] / \overline{X}$$

where b_{ij} is the factor loading of variable i on factor j; i = 1, 2, ..., m, and j - 1, ..., p. One important advantage of the Varimax solution is that the resulting factors tend to be "invariant under changes in the composition of the test battery."[83]

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[83] H. F. Kaiser, "The Varimax Criterion for Analytic Rotation in Factor Analysis," Psychometrika, XXIII (1958), 187 - 200.

Subproblem 2. The second subproblem was to determine if self-concept changes were evident from the personality profiles of underdeveloped boys after completing the special physical education program stressing self-evaluation.

Hypothesis 2. The pre-test and post-test personality profiles of the underdeveloped boys will not differ significantly after participation in the self-evaluation program.

THE DATA NEEDED

The data needed for this subproblem were means and standard deviations of the individual CPI subtests. These were computed by the IBM 7094 computer at WDPC. The formula for computing the means is:

$$\frac{\Sigma X_{ij}}{N} = \overline{X}$$

where N = number of individuals

X_i = the score for the i individual on the j subtest.

The mean for each subtest was computed. The standard deviation was found by using the formula:

$$\text{s.d.} = \sqrt{\frac{\Sigma X_{ij}^2}{N} - (\overline{X})^2}$$

where $\overline{X}$ = the mean for the variable

X_{ij}^2 = the squared score of the i, individual

$i = 1, 2, \ldots, n$, on the j subtest

$j = 1, 2, \ldots, p$.

Statistical texts, such as Hays[84], were used to determine when between group and within group comparisons were statistically significant.

[84] William L. Hays, Statistics for Psychologists (New York: Holt Rinehart and Winston, Inc., 1963).

Table values for given statistics were compared with data computed in the study.

Nondirectional tests of significance of mean differences between populations were computed for both the independent comparisons of the athletes and the non athletes, as well as, the dependent comparisons of the before and after administrations of the CPI to the same population.

When a significance test of the difference between the means of such data yields a "t" value equal to or greater than the tabled value, the null hypothesis can be rejected with considerable confidence. Two types of tests were made, therefore, tests to indicate differences between athletes and non-athletes and tests to show before and after differences within the same population.

Scale by scale, "t" test statistics were computed between the subgroups for the individual CPI scale in order to determine which specific CPI scales contributed to subgroup differences. The formula for finding "t" is as follows:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{N_1 S_1^2 + N_2 S_2^2}{N_1 + N_2 - 2}\right)\left(\frac{N_1 + N_2}{N_1 N_2}\right)}}$$

Where $\bar{X}_1$ and $\bar{X}_2$ are means; N_1 and N_2 are the population sizes

S_1^2 and S_2^2 = the variances of the groups.

The computed "t" values were checked for statistical significance in a table of "t" values in a statistics text having such tables.[85]

Subproblem 3. The third subproblem was, did the personality profiles of a sample of underdeveloped boys, chosen by using a table of

[85] IBID.

random numbers to receive additional encouragement from the instructor during the duration of the non-competitive program, differ from the personality profiles of the other boys in the program?

Hypothesis 3. The personality profiles of the underdeveloped boys limited to self-evaluation of their strength and performance do not differ significantly from the profiles of the randomly selected boys who receive instructor encouragement.

The same types of statistics were used to test the final three hypotheses as have been explained earlier for subproblem two.

Subproblem 4. The fourth subproblem was, did the post-test personality profiles of the underdeveloped boys differ from the post-test personality profiles of the athletes at the completion of the self-evaluation program?

Hypothesis 4. The between group personality profiles of the underdeveloped boys and the athletic boys will not differ significantly at the end of the self-evaluation program.

Subproblem 5. The fifth subproblem was, did the personality profiles of the athletic boys differ significantly on their pre- and post-test results when they were not involved in active self-evaluation.

Hypothesis 5. The personality profiles of athletic boys will not differ significantly in the fall and the spring of an academic school year.

SUMMARY

This chapter restated the problem investigated in this study of adolescent boys. This was done for the sources of the data, both physical and psychological; the criteria used for assigning subjects to

the study; the processes used to gather the various types of information; and the description of both the physical and psychological measures as well as the detailed statistical methodology used to evaluate each sub-problem in the study.

CHAPTER IV

PRESENTATION AND INTERPRETATION OF DATA

SETTING OF THE STUDY

Every person is born with his own unique attributes that cause him to be, in some ways, unlike any other person. Kierkegaard[86] stressed, however, that true individuality is an accomplishment rather than an endowment and is achieved by active rather than passive endeavors. Often no sustained effort is made by the individual or those in his environment to develop that individuality.

Even casual observation indicates that individuals with self doubt and anxiety usually are not engaged in the process of becoming aware of themselves. This study is an attempt to show how experiencing growth and change can alter the individual's self concept. One goal of the experimental program reported here was to bring physically underdeveloped boys to experience the beginning of a frame of self-reference that will build a positive synthesis between their potentials and their aspirations by understanding themselves as developing rather than inadequate individuals.

It was assumed that the underdeveloped boys, because of their physical limitations and a curriculum format which highlighted their limitations in competition with their more rapidly maturing peers, would produce a negative self-image. On the basis of this assumption, a special program was established within the physical education curriculum to create a functioning self-evaluation environment. The purpose of this environment was to aid the underdeveloped boys to experience self-growth

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[86] Soren Kierkegaard, The Point of View for My Work as an Author, Translated by Walter Lowrie, (New York: Harper & Row Book Company, 1962).

awareness rather than striving for goals beyond their personal capacity and development.

Kierkegaard[87] noted that personal awareness does not mean that a person should not try to identify with other people and use their standards for examples once it is discovered that one's own potentials parallel those criteria. This requires that the experiencing individual must examine himself, his current real environment, and his potentials to determine how effort in a given direction will constructively build his development.

Strickland[88] said, "To become oneself refers to the recognition of your potentials and the acceptance of the challenge of realizing them."

Frankl[89] stated, "Once the individuality of a person is initiated and established, it will persist even under extreme conditions of discouragement." Assuming that life is a continuing process requiring that to become oneself an individual must understand himself, the environment for this study was created to provide a context where it was possible for the experiencing individuals (underdeveloped boys) to reorient their self-concept. The environment was structured to change the standard for growth from pressure for societal conformity or norms to more self oriented, inner-directed acceptance of personal potentials and limitations.

Realizing that individuals do not develop in a vacuum, the experi-

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[87] IBID.

[88] Benjamin Strickland, "Kierkegaard and Counseling for Individuality," Personnel and Guidance Journal, XLIV (1966), 470 - 74.

[89] Victor E. Frankl, Man's Search for Meaning, (New York: Washington Square Press, 1963).

mental program was developed to work with the underdeveloped boys in an environment that was familiar to them, the physical education period. Despite its familiarity, this experience had not been a positive one for most of the underdeveloped boys. They were, as Snygg and Coombs have said, unable to experience the necessary positive aspects involved in personal development to be able to maintain, enhance or protect the self-image.

Rogers[91] believes that an individual seeks empathy rather than rebellion with the values of his culture. If this is true, an environment allowing constructive individuality is more desirable than one based on competition of the type that yields mostly defeat and rejection for individuals with various limitations. Thus, the program in this study sought to investigate a way to reduce the pressure of an environment which produces a series of competitive failures. This study also sought to show that this type of environment can be developed within the existing curriculum with only minor changes.

POPULATION AND SAMPLES

The sample populations for the study were from the male student body enrolled in grades seven through nine in an urban junior high school of 1,024 students. The two groups identified for inclusion in the study were composed of (1) 128 male students unable to pass the minimum physical requirements described in the President's Council on Youth Fitness Bulletin entitled, Youth Physical Fitness[92] and (2) 27 male students

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[90] Snygg and Coombs, loc. cit.

[91] Rogers, loc. cit.

[92] AAHPER, loc. cit.

who participated on any varsity athletic team for the junior high school. The two populations were referred to as the underdeveloped boys and the athletes, respectively.

DATA AND INSTRUMENTATION

Two types of data were gathered, physical data and psychological data. The physical data were gathered with the youth fitness specifications and the Unterseher Development Series (Appendix D). All psychological data was obtained from using the California Psychological Inventory.[93] All data were collected using the facilities at the school.

The analysis of the data was accomplished principally through the IBM 7094 computer located at the Western Data Processing Center at The University of California at Los Angeles. Additional secondary statistical computations were done with electronic calculations.

GENERAL DESIGN PROCEDURES

The identification of the underdeveloped boys was based on their failure to pass the minimum physical requirements of a performance test administered to the entire student body early in the fall term. After the underdeveloped boys were identified, the California Psychological Inventory was administered prior to starting the special physical education program. The athletes were also administered the CPI at this time. This was accomplished during the first two weeks of the fall term.

Following their identification and testing, the underdeveloped boys were entered in a developmental physical education program of weight lifting and body building structured around the emphasis of self-growth and self evaluation. Thirty of the underdeveloped boys were chosen by a

[93] Gough, loc. cit.

table of random numbers to receive additional special encouragement from the program's instructor once every other week. Any gains in either strength or physical measurements were noted by the instructor and pointed out to these thirty boys.

The CPI was readministered to both the underdeveloped and the athlete populations.

FACTOR ANALYTIC FINDINGS

The scales of the CPI were factor analyzed for the underdeveloped boys and the athletes on both the pre- and post-test administrations to determine if there were major differences or similarities between the groups. The following discussion will relate those findings by discussing initially the pre-test factors for, each group and then the post-test factors.

The rotated factor matrix for the CPI pre-test for the underdeveloped boys contained high negative loadings on the CPI scales of dominance (Do), capacity for status (Cs), self-control (Sc), tolerance (To), good impression (Gi) and achievement via conformance (Ac). Because of the high negative loadings on this factor, it was titled "Apprehensiveness." The second factor for the underdeveloped boys contained the three CPI scales of sociability (Sy), social presence (Sp) and self-acceptance (Sa) and was titled "Self-Depreciation" due to the negative loadings on the CPI scales. The third factor identified for the underdeveloped boys was composed of positive loadings on the responsibility (Re), socialization (So), communality (Cm) and femininity (Fe) scales. This factor was labeled "Conformance." A fourth, poorly defined factor, called "Independence," contained the CPI scales achievement via independence (Ai) and flexibility (Fx). The four factors "Apprehensiveness," "Self-

Depreciation," "Conformance" and "Independence" accounted for roughly three fourths of the test variance. Table one shows the rotated factor matrix for the underdeveloped boys CPI pre-test.

The pre-test factors for the athletes varied from those of the underdeveloped boys. The first factor had loadings on the CPI scales of well-being (Wb), self-control (Sc), tolerance (To), good impression (Gi) and achievement via independence (Ai). Due to the negative loadings on all the scales except (Wb), the factor was called "Aloofness." The CPI scales dominance (Do), capacity for status (Cs), sociability (Sy), social presence (Sp), self-acceptance (Sa) and intellectual efficiency (Ie) composed the second factor for the athletes and was titled "Self-assurance." Responsibility (Re), socialization (So) and communality (Cm) were contained in the third factor for athletes. This factor was identical to the third factor for the underdeveloped boys called "Conformance." There was no clear cut fourth factor for the athletes. The only sizeable loading was on the CPI scale for flexibility (Fx). Despite the fact that Crites[94] chose to identify this single scale as a factor in this study, it seemed too weak to stand as a factor in its own right. Others who have factor analyzed the CPI also do not include (Fx) as a factor. The CPI scales usually grouped with (Fx) of tolerance (To), achievement via independence (Ai), psychological mindedness (Py) and social presence (Sp) had only low moderate to small residual loadings in this study. Table two contains the rotated factor matrix for the athletes pre-test on the CPI.

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[94] Crites, loc. cit.

TABLE 1

ROTATED FACTOR MATRIX FOR THE CALIFORNIA PSYCHOLOGICAL INVENTORY UNDERDEVELOPED BOYS PRE-TEST

CLASS	CPI SCALES	I	II	III	IV	h^2
I.	Measures of Poise, Ascendance and Self-Assurance					
	Dominance	-62	51	07	26	72
	Capacity for Status	-69	41	12	19	69
	Sociability	45	73	16	14	77
	Social Presence	07	-81	02	35	78
	Self-Acceptance	04	-85	22	02	77
	Sense of Well-Being	53	27	50	35	73
II.	Measures of Socialization, Maturity and Responsibility					
	Responsibility	47	25	65	13	72
	Socialization	35	19	-79	04	79
	Self-Control	-74	16	52	13	86
	Tolerance	-65	29	31	45	81
	Good Impression	-82	03	31	15	80
	Communality	-01	27	-82	14	76
III.	Measures of Achievement, Potential and Intellectual Efficiency					
	Achievement via Conformance	-67	26	49	06	77
	Achievement via Independance	51	25	25	-60	75
	Intellectual Efficiency	54	46	47	30	81
IV.	Measures of Intellectual and Interest Modes					
	Psychological Mindedness	47	44	20	16	48
	Flexibility	06	02	04	-85	72
	Femininity	12	09	62	01	41

TABLE 2

ROTATED FACTOR MATRIX FOR THE CALIFORNIA PSYCHOLOGICAL INVENTORY ATHLETIC BOYS PRE-TEST

CLASS	CPI SCALES	I	II	III	IV	h^2
I.	Measures of Poise, Ascendance and Self-Assurance					
	Dominance	08	79	18	23	72
	Capacity for Status	26	79	09	16	73
	Sociability	09	89	07	19	85
	Social Presence	13	76	06	13	62
	Self-Acceptance	01	85	14	08	74
	Sense of Well-Being	75	27	23	16	72
II.	Measures of Socialization, Maturity and Responsibility					
	Responsibility	51	17	-64	12	71
	Socialization	45	07	-68	26	74
	Self-Control	-89	18	04	13	86
	Tolerance	-78	36	14	19	80
	Good Impression	-75	13	27	18	70
	Communality	03	18	80	09	68
III.	Measures of Achievement, Potential and Intellectual Efficiency					
	Achievement via Conformance	55	36	47	29	74
	Achievement via Independence	-75	09	08	37	71
	Intellectual Efficiency	58	-60	17	06	80
IV.	Measures of Intellectual and Interest Modes					
	Psychological Mindedness	41	58	11	20	56
	Flexibility	09	04	03	-87	76
	Femininity	17	06	56	34	46

After the underdeveloped boys participated in the self-evaluation program for eight months, the factor analytic structure was quite different when the CPI was readministered. The second factor analysis indicated that the primary factor was composed of the CPI scales well-being (Wb), responsibility (Re), socialization (So), self-control (Sc), tolerance (To), good impression (Gi), achievement via conformance (Ac), and intellectual efficiency (Ie). In marked contrast to the first factor analysis, there were no negative loadings on any of the CPI scales. The factor was called "social responsiveness" or "basic maturity."

The second factor from the post-test study of the underdeveloped boys contained the CPI scales of dominance (Do), capacity for status (Cs), sociability (Sy), social presence (Sp) and self-acceptance (Sa). This is essentially the same factor that was called "self-assurance" in the pre-test factor structure of the athletic boys. This factor is also found as a clearly identified factor in the other studies that have been conducted using the CPI. Some of the other studies have named the factor "extroversion," "social poise," "person orientation," "the expansive personality" and "the hustler." Based on the adjective descriptions in the manual[95] and the high positive loading in the matrix, "self-assurance" seems most appropriate. The factor identified as "independence" in the pre-test matrix was still present in the post-test structures. This factor was composed of a positive loading on achievement via independence (Ai) and with a negative loading on flexibility (Fx). A fourth factor that was not well defined was titled "role identity" and was formed by a positive loading on communality (Cm) and a marginal negative loading on

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[95] Gough, op. cit. p. 12 - 13.

femininity (Fe). The factor is included mostly because of the indication it reveals in the outlook of the underdeveloped boys after the program. Table three shows this matrix.

The post-test factor analysis of the athletes shown in table four had three identifiable factors. The first factor was made up of the CPI scales well-being (Wb), responsibility (Re), self-control (Sc), tolerance, (To), good impression (Gi), achievement via conformance (Ac) and achievement via independence (Ai). This factor had the same basic factor structure as the "social responsiveness" factor for the underdeveloped boys on the post-test factors. There was one major difference, however, in that the (Re), (Sc), and (Gi) scales were negative loadings. Because of this indication of a lower degree of impulse control, the factor seems to fit somewhere between Nichols and Schnell's[96] "value orientation" and the present study's "social responsiveness." The factor has an element of the pre-test "aloofness" from an egotistic and sarcastic point of view. The second factor identified for athletes was the "self-assurance" factor identified earlier. This factor is composed of the CPI scales dominance (Do), capacity for status (Cs), sociability (Sy), social presence (Sp) and self-acceptance (Sa). This factor was also identified for underdeveloped boys on the post-test factor groupings. The CPI scales communality (Cm) and flexibility (Fx) formed the final factor. The positive (Cm) and the negative (Fx) form a factor called "rigidity."

From the factor findings, the self-evaluation program seems to have had a positive effect on the underdeveloped boys. The pre-test factors of "apprehensiveness," "self-depreciation," "conformance," and "independence" when compared to the post-test factors of "social responsiveness,"

[96] Nichols and Schnell, loc. cit.

TABLE 3

ROTATED FACTOR MATRIX FOR THE CALIFORNIA PSYCHOLOGICAL INVENTORY UNDERDEVELOPED BOYS POST-TEST

CLASS	CPI SCALES	I	II	III	IV	h^2
I.	Measures of Poise, Ascendance and Self-Assurance					
	Dominance	34	80	06	02	76
	Capacity for Status	32	67	43	12	75
	Sociability	23	87	05	05	82
	Social Presence	04	64	42	33	70
	Self-Acceptance	05	87	01	17	76
	Sense of Well-Being	84	18	14	25	80
II.	Measures of Socialization, Maturity and Responsibility					
	Responsibility	77	21	07	04	64
	Socialization	82	06	24	25	80
	Self-Control	92	01	00	16	87
	Tolerance	79	34	36	02	88
	Good Impression	75	19	04	38	75
	Communality	41	04	23	74	77
III.	Measures of Achievement, Potential and Intellectual Efficiency					
	Achievement via Conformance	87	30	04	02	85
	Achievement via Independence	58	24	57	06	73
	Intellectual Efficiency					
IV.	Measures of Intellectual and Interest Modes					
	Psychological Mindedness	-49	35	38	00	50
	Flexibility	04	05	-86	02	74
	Femininity	34	08	34	-58	59

TABLE 4

ROTATED FACTOR MATRIX FOR THE CALIFORNIA PSYCHOLOGICAL INVENTORY ATHLETIC BOYS POST-TEST

CLASS	CPI SCALES	I	I	III	h^2
I.	Measures of Poise, Ascendance and Self-Assurance				
	Dominance	03	68	06	46
	Capacity for Status	31	79	07	73
	Sociability	01	90	04	81
	Social Presence	08	85	31	86
	Self-Acceptance	17	90	15	85
	Sense of Well-Being	91	01	19	86
II.	Measures of Socialization, Maturity and Responsibility				
	Responsibility	-72	27	47	82
	Socialization	58	27	60	76
	Self-Control	-87	26	30	91
	Tolerance	91	27	03	90
	Good Impression	-76	13	00	60
	Communality	49	20	68	74
III.	Measures of Achievement, Potential and Intellectual Efficiency				
	Achievement via Conformance	91	13	28	91
	Achievement via Independence	76	40	34	84
	Intellectual Efficiency	54	54	19	62
IV.	Measures of Intellectual and Interest Modes				
	Psychological Mindedness	53	53	41	73
	Flexibility	10	36	-87	61
	Femininity	17	42	47	43

"self-assurance," "independence" and "role identity" demonstrate a change in the responses given to the CPI before and after the program.

The less positive evidence of change is also evident in the comparison of the athlete pre-and post-test factor findings. The pretest factors were "aloofness," "self-assurance" and "conformance." The first two factors remained the same while "conformance" was replaced by a factor labeled "rigidity." To discover more about the actual interactions, both between and within the subgroup populations, a discriminant analysis program was utilized to identify the specific sources of interaction in the groups.

COMPARISON OF CPI SCALES FOR UNDERDEVELOPED BOYS AND ATHLETES

To determine significant subgroup differences, "t" tests were computed for the various combinations of the separate CPI scale scores for both the underdeveloped boys and the athletes. Comparisons were made within and between the separate scale mean scores recorded for the underdeveloped boys and the athletes both before and after the self-evaluation program.

For the underdeveloped boys, ten of the eighteen scales of the CPI had significant "t" test differences. All of the mean-score differences showed positive post-test gains. Examination of the CPI scales yielding significant differences also substantiated the factor analytic findings and the resulting factor labels.

The scales yielding significant differences were from the three of Gough's original scale classification areas. Capacity for status (Cs), social presence (Sp) and sense of well-being (Wb) were from the

"Measures of poise, ascendency and self-assurance" class. The (Wb) scale, however, is consistently grouped with the scales related to "measures of socialization, maturity and responsibility" in most factor analytic studies. The scales from that second group that had significant mean-score differences in this study were socialization (So), self-control (Sc), tolerance (To) and communality (Cm).

The final three scales showing mean-score differences were achievement via conformance (Ac), achievement via independence (Ai) and intellectual efficiency (Ie). These three scales comprised the "Measures of achievement potential and intellectual efficiency" classification in Gough's CPI manual.[97] These three scales, functioning as a unit, have been shown to be consistently good non-academic predictors of academic success in studies mentioned in Chapter Two. The identification of this three scale unit and the positive mean-score increases on the scales was viewed as a plus for the use of a self-evaluation environment and will be discussed further in the next chapter of this study.

To gain additional information about the overall change that took place in the underdeveloped boys, analyses were also made using the underdeveloped boys "after" scores and the athletes "before" scores, and the underdeveloped boys "before" scores and the athletes "after" scores. Both comparisons were significant at the $p < .01$ level of significance.

These comparisons show that each subgroup had experienced self-concept changes during the academic year which were greater than would be accounted for by chance. To better understand the changes, a more

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[97] Gough, loc. cit.

detailed examination of the CPI was made scale by scale. Table five shows the percentages of the two subgroups who had positive score increases on each of the CPI scales on the post-test administration.

This scale by scale examination showed that thirty-two percent (32%) of the underdeveloped boys had score increases on at least three-fourths of the CPI scales. Forty-nine percent (49%) had increases on between one-half and three-fourths of the scales and the remaining nineteen percent (19%) had increases on less than one-half of the CPI scales on the post-test results. On seven of the scales (Cs) capacity for status, (Sc) self-control, (Gi) good impression, (Ac) achievement via conformance, (Ai) achievement via independence, (Py) psychological mindedness and (Fe) flexibility, the underdeveloped boys showed the greater percent of increase.

The athletes had fifty-eight percent (58%) who increased in three-fourths or more of the CPI scales, thirty-six percent (36%) who increased on between one-half to three-fourths of the scales, and only six percent (6%) who increased on less than one-half of the scales. Despite the fact that more of the athletes had a greater percent of change on the CPI scales, the amount of total raw score change was not as great as that of the underdeveloped boys subgroup.

INTERPRETATION OF PROFILES

As the CPI manual[98] suggests, interpretation of the profiles must deal with the patterns and combinations of high and low scores. By integrating this kind of information, a better understanding of the total profile is possible. The total over-all picture is more meaningful than

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[98] IBID.

TABLE 5

PERCENT OF UNDERDEVELOPED BOYS AND ATHLETE SUBGROUPS SHOWING INCREASED SCORES ON POST-TEST CPI RESULTS

CPI SCALE NAME	UNDERDEVELOPED BOYS	ATHLETES
Dominance	62.5	73.6
Capacity for Status	74.5	74.0
Sociability	65.5	68.4
Social Presence	66.5	78.9
Self Acceptance	60.2	84.2
Sense of Well-Being	69.6	89.5
Responsibility	66.5	73.6
Socialization	69.4	73.0
Self Control	65.5	63.2
Tolerance	69.4	84.2
Good Impression	65.4	79.0
Communality	72.5	79.0
Achievement via Conformance	78.6	73.6
Achievement via Independence	79.6	63.5
Intellectual Efficiency	80.6	84.0
Psychological Mindedness	71.5	63.2
Flexibility	58.4	41.0
Femininity	37.8	52.6

the outcome of a single scale. To facilitate interpretation, the CPI manual has lists of both positive and negative adjectives associated with the scales. These lists were used in developing the descriptions of profiles in this study.

To provide a better reference for the profiles, adjusted mean profile sheet was developed from four hundred CPI profiles of junior high school boys. These profiles came from other works by the author using the CPI. Figure one shows the profile sheet used in this study. The manual suggests that when scores are above the mean standard score the person is functioning effectively. Conversely, scores below the mean

FIGURE 1

ADJUSTED MEAN PROFILE SHEET FOR JUNIOR HIGH SCHOOL MALES
BASED ON 500 JUNIOR HIGH SCHOOL BOYS. MEANS AND STANDARD DEVIATIONS

	Do	Cs	Sy	Sp	Sa	Wb	Re	So	Sc	To	Gi	Cm	Ac	Ai	Ie	Py	Fx	Fe	
70	34	22	30	42	25		38	46	39	29	25		34	22	44	14	15	24	70
60	28	18	25	36	21	39	32	40	31	23	19	27	28	18	38	11	11	21	60
50	22	14	20	30	17	32	26	34	23	17	13	24	22	14	32	8	7	18	50
40	16	10	15	24	14	25	20	28	15	11	7	21	16	10	26	5	3	15	40
30	10	6	10	18	10	18	14	22	7	5	1	8	10	6	20	2		12	30
	Do	Cs	Sy	Sp	Sa	Wb	Re	So	Sc	To	Gi	Cm	Ac	Ai	Ie	Py	Fx	Fe	

STANDARD SCORES

standard score indicate the probability of one who is experiencing difficulty. The more extreme the scores are, the more adequately a particular set of adjectives is likely to be characteristic.

To make the profile discussion more relevant, only those scales that were significantly different in means for the pre-and post-tests will be discussed in detail in this section. The characteristic attributes of the pre-test administration will be discussed first, then the post-test characteristics will be presented for contrast and comparison.

The scales having statistically different means for the pre-and post-test administrations of the CPI to the underdeveloped boys were (Cs) capacity for status, (Sp) social presence, (Wb) sense of well-being, (So) socialization, (Sc) self-control, (To) tolerance, (Cm) communality, (Ac) achievement via conformance, (Ai) achievement via independence and (Ie) intellectual efficiency. Table six presents the mean scores and the standard deviations for the two CPI administrations. Figure two is the pre-test mean profile for the underdeveloped boys, and Figure three is the post-test profile for that group.

The profile in Figure two indicates that the (Cs) scale was below the standard score mean and should be interpreted as indicating a lack of self-confidence, low conviction that success can be anticipated in either the present or the future. It is indicative of a feeling of being unable to meet stress and unforeseen circumstances without anxiety or self doubt. Low scorers are usually impatient, irritable, over-petty, annoyances and dispirited.

The low (Sp) social presence score is identified with persons who are cautious, more compliant, more conforming, less likely to intrude or force themselves upon others. The scale is interpreted as showing

FIGURE 2

CPI PRE-TEST MEAN PROFILE FOR UNDERDEVELOPED BOYS

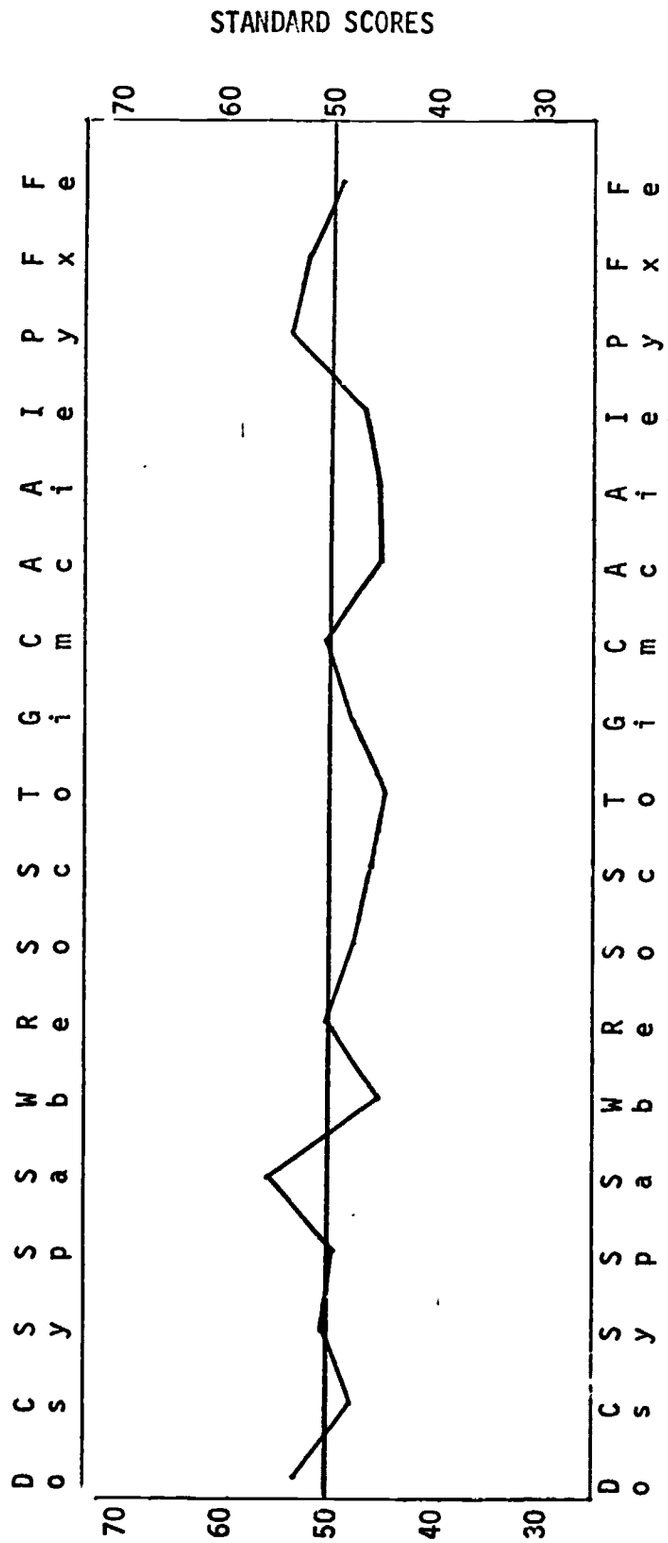

FIGURE 3

CPI POST-TEST MEAN PROFILE FOR UNDERDEVELOPED BOYS

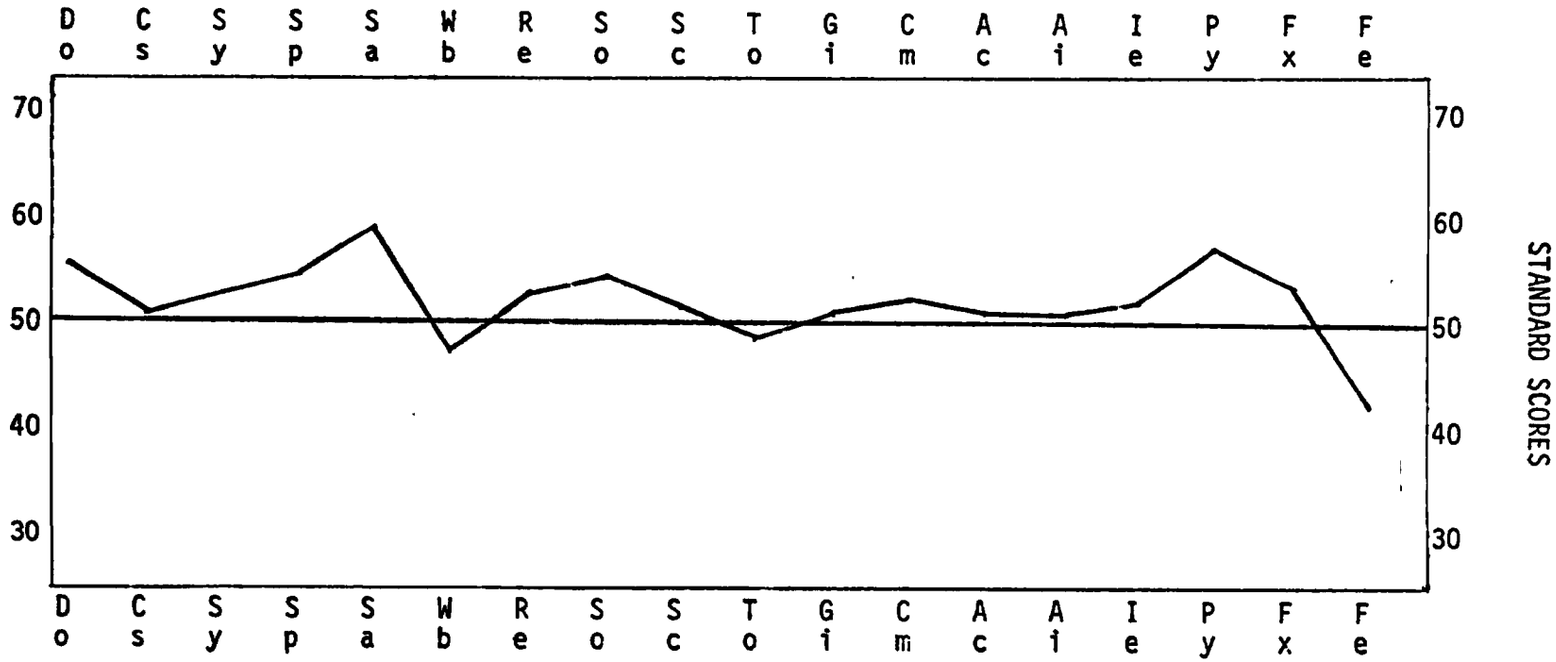

TABLE 6

MEANS AND STANDARD DEVIATIONS ON THE CALIFORNIA PSYCHOLOGICAL INVENTORY FOR UNDERDEVELOPED BOYS

CPI SCALES	UNDERDEVELOPED BEFORE $\bar{X}$	s.d.	UNDERDEVELOPED AFTER $\bar{X}$	s.d.
Do	22.80	5.66	23.71	5.86
Cs	12.88	3.68	14.02	4.19*
Sy	20.22	5.12	20.91	5.23
Sp	29.41	5.79	31.66	5.40*
Sa	17.96	3.90	18.41	3.81
Wb	28.53	7.29	29.85	6.91**
Re	26.10	6.29	27.05	6.11
So	33.57	6.68	35.91	6.48*
Sc	21.55	7.79	23.33	8.07**
To	14.58	5.29	16.44	6.05*
Gi	12.07	5.17	13.01	6.16
Cm	24.39	3.54	25.31	2.99*
Ac	19.61	5.44	22.05	5.88*
Ai	12.42	4.43	14.16	4.48*
Ie	29.11	5.99	32.67	6.43*
Py	9.02	2.61	9.91	2.53
Fx	7.80	3.48	7.96	3.66
Fe	16.34	3.53	15.84	3.40

*Significant at .01 level
**Significant at .05 level

those who are more hesitant and uncertain in social relations.

The third scale in the profile was (Wb) sense of well-being. This was one of the lowest scores in the profile for the underdeveloped boys and indicates, according to the manual, a diminished reserve of energy and a feeling of unwillingness in facing interpersonal demands. Those scoring low are often anxious, quitters and restless. They are also seen as at odds with themselves and others. There is too, a tendency to dwell on one's own problems, to commiserate with oneself and to resent

circumstances more favorable than their own, representing an over-emphasis on worries and personal problems.

Socialization (So) scores below the mean signify not being alert to the inner needs of others, dissatisfaction with family, distrust of others, alienation, a social disposition and attitudes, deceitfulness and mischievous.

Self-control (Sc) was the fifth CPI scale having a significant mean score variance. Low (Sc) scores indicate a predisposition to be excitable, temperamental, hasty, conceited, fault finding, impulsive, headstrong. At times, those with low (Sc) seek to supress impulses and behave in an inappropriate way.

The low (To) tolerance score also indicates more of the same pattern that the other CPI scales have shown in that it shows feelings of hostility, estrangement and disbelief. The (Cm) communality score was at the mean standard score; and since the major gain for this scale is related to the post-test administration, (Cm) will be discussed with the post-test profile.

The final three scales to be discussed form a cluster that has been found to be predictive of academic achievement. The pre-test findings for the underdeveloped boys show scores on all three scales below the mean. Low (Ac) achievement via conformance is associated with under-achievers, rebels, and those who are distrustful. The extent of deviation for the underdeveloped boys on these scores approaches Gough's range for disciplinary problem identification. Low (Ai) achievement via independence shows an element of immaturity and lack of self insight with a tendency to do things that are unwise and self defeating. The third scale in this group, (Ie) intellectual efficiency, fits the dominant pat-

tern of the entire underdeveloped boy profile in showing a lack of self-assurance, apprehensiveness, dependence on others, while being suspicious and overly sensitive with a narrow range of interests.

At the conclusion of the self-evaluation program, it should be pointed out, all of the scales mentioned above, (Cs), (Sp), (So), (To), (Cm), (Ac), (Ai), and (Ie) with the exception of (Wb), sense of well-being, had moved above the standard score mean. The mean score differences for (Wb) and (Sc) were significant at the $p < .05$ level of significance while all of the other scales were significant at the $p < .01$ level of significance.

The low (Wb) score was not a factor that was limited to the underdeveloped boys, however. As a group, the athletes were also low on this scale. This is probably more related to the fact that all of these junior high school boys are still very much in the period of the adolescent transition. In both groups, however, the (Wb) score did increase on the post-test administration. This increase indicates the boys are approaching a feeling of being equal to the demands of time and energy that one encounters in daily living and are comfortable enough with themselves and their status to be better humored, fair minded and able to conform to outside standards.

The changes in the other nine CPI scales were complete transitions from below the standard score mean above the standard score mean. It was on this basis that the pre-test and post-test factor analysis were retitled from "apprehensiveness" to "self-assurance." Examination of the CPI Manual's adjective listings for these scales illustrates this fact also.

Higher (Cs) capacity for success scores for the underdeveloped boys indicate new feelings of self-confidence, anticipation of success, both

ow and in the future and freedom from behavioral constraints. High scores are associated with social poise and feeling able to deal with the stress of circumstances, to be free from anxiety and not being anxious. Increased (Cs) capacity for status scores indicate feeling responsive to the environment and able to take or extract advantage from it.

Higher (Sp) social presence scores indicate a tendency to sometimes bow to whims or impulses, but it also indicates spontaneity, one who has wit, vigor and enthusiasm in social contacts. High (So) socialization scores are related to persons seen by their peers as reliable, honest, trustworthy and adaptable. They are perceptive of the inner needs and feelings of others.

The post-test increase in (Sc) self-control scores fits the profile description from other CPI scales in showing that positive scores indicate self-control, dependable, but hard headed and self-denying persons apt to propose social change. They also have a zest for confronting and show innovation and spontaneity.

The post-test (To) tolerance score moved up toward the standard score mean but still remained just below it. Low tolerance scores are associated with those who are affected, fussy, egotistical, sometimes whiny and fault finding. The change was significant at the $p < .01$ level. However, the fact that this score did move up to the standard score mean, where the manual describes high scorers as generous, with pleasant humanitarian sentiments, thoughtful and unselfish gives a creditability to the other CPI scales in the profile and the overall findings in the study.

One of the most encouraging aspects in the post-test profile for the underdeveloped boys was the increase in the three scales (Ac) achievement via conformance, (Ai) achievement via independence and (Ie) intel-

lectual efficiency. These three scales form a diagnostic group that has been labelled by Gough in the CPI Manual, "Measures of Achievement Potential and Intellectual Efficiency." Studies mentioned earlier in this study indicated these scales are effective as non-intellective predictors of academic success. High (Ac) achievement via conformance scores relate to diligent, responsible dedication of effort in pursuit of worthy and meritorious goals and have shown consistent validity in forecasting high school grades.

High (Ai) achievement via independence shows needed achievement along independent, self actualizing lines. The higher (Ie) intellectual efficiency score is associated with being able easily and efficiently to direct ones efforts and apply abilities based on self-confidence and self-assurance.

Discussions held with teachers during the week that the second administration of the CPI was being made seem to confirm this attitude. Several teachers related their independent observations that the boys involved in the self-evaluation program had become more interested as students during the second semester of the year. While no cause and effect evidence is available, the fact that the change was obvious enough to illicit this type of comment several times seems significant to mention as the data for the underdeveloped boys is discussed.

The means and standard deviations used for the profiles of the athletic boys are found in Table 7. The profiles for the pre- and post-test CPI administrations are found in Figures four and five. The athlete profile for the pre-test was clinically quite different from the profile of the underdeveloped boys. This difference was also evident in the factor analysis findings. The athletes showed more dominance and self-

FIGURE 4

CPI PRE-TEST MEAN PROFILE FOR ATHLETIC BOYS

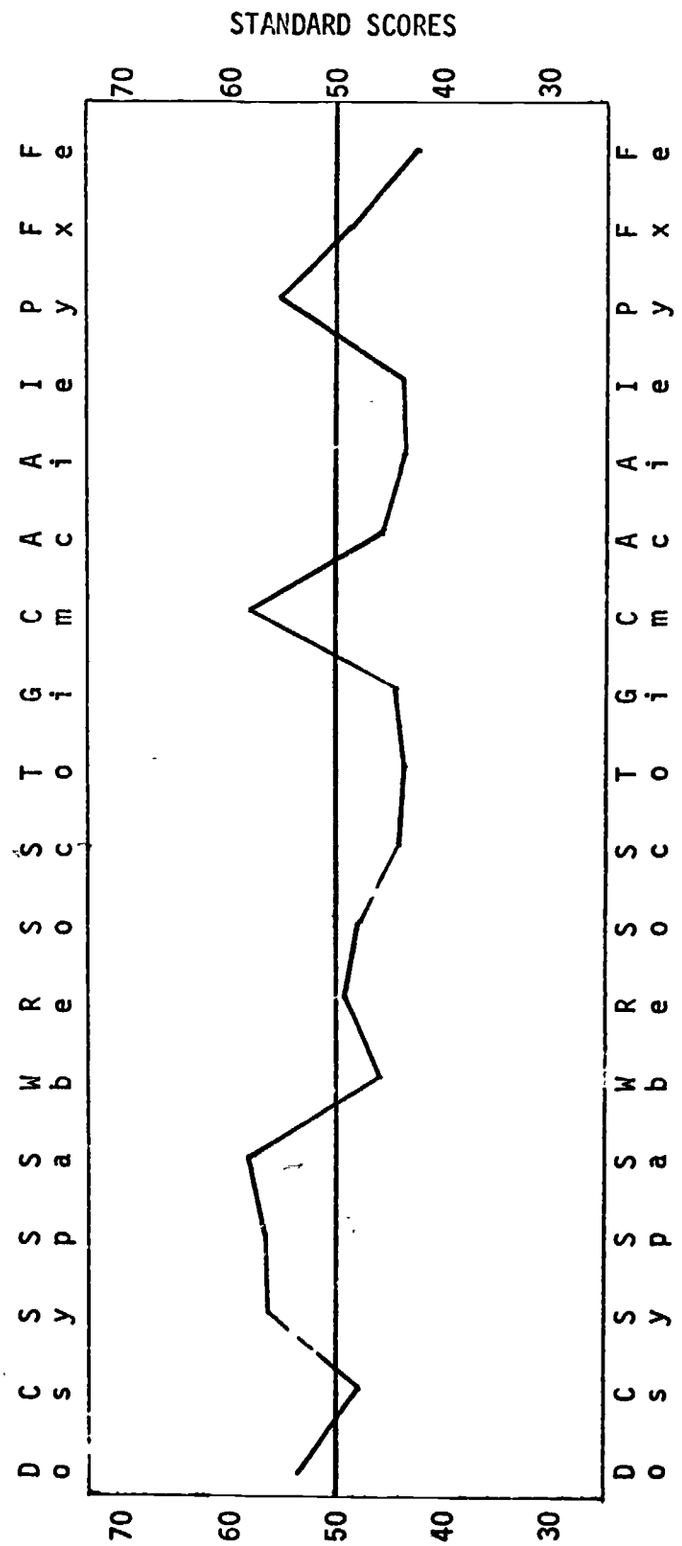

FIGURE 5

CPI POST-TEST MEAN PROFILE FOR ATHLETIC BOYS

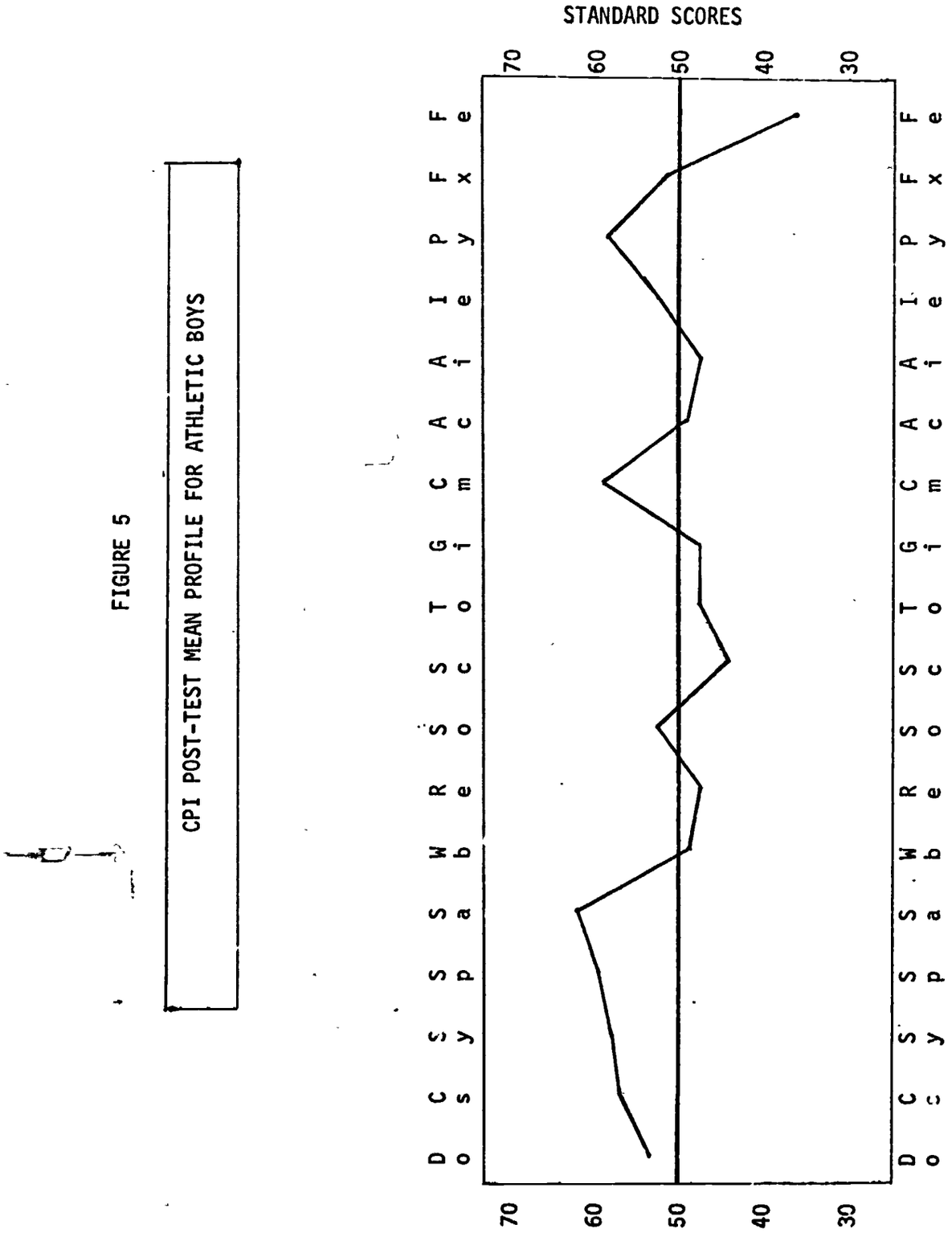

TABLE 7

MEANS AND STANDARD DEVIATIONS ON THE CALIFORNIA PSYCHOLOGICAL INVENTORY FOR ATHLETIC BOYS

CPI SCALES	ATHLETIC BEFORE $\bar{X}$	SD	ATHLETIC AFTER $\bar{X}$	SD
Do	23.43	5.53	23.35	6.07
Cs	13.08	3.88	15.94	3.45*
Sy	22.16	4.96	22.59	6.15
Sp	31.96	5.54	35.35	4.48*
Sa	19.73	3.94	21.47	3.55**
Wb	29.00	6.94	30.53	7.12
Re	25.69	5.53	25.18	5.79
So	33.45	4.83	35.41	7.18
Sc	19.35	6.76	20.12	8.56
To	14.06	4.23	16.24	6.59
Gi	10.71	4.86	11.70	5.79
Cm	25.78	2.15	25.76	2.51
Ac	20.18	4.53	21.94	5.98
Ai	12.26	3.63	13.01	3.84
Ie	29.33	5.08	32.59	7.00**
Py	9.51	2.47	10.06	2.66
Fx	7.57	3.12	7.65	4.15
Fe	15.94	3.05	14.53	2.00

*Significant at .01 level
**Significant at .05 level

confidence in high CPI scores on (Do) dominance, (Sy) sociability, (Sp) social presence and (Sa) self-acceptance. The evidence of adolescent anxiety, which was mentioned earlier in this chapter, was obvious even for these athletic boys. The low (Wb) sense of well-being scale scores indicate this.

There was considerably less overall profile change in the athletes than there was in the underdeveloped boys between the two CPI administrations. Significant differences were found on only four scales. Three

of these, however, were in the class of scales the CPI Manual refers to as "Measures of Poise and Self-Assurance." The high (Cs) score deals with self-confidence, a conviction of success, social poise and feeling able to cope with stress, anxiety and self-doubt. The (Sp) social presence scale fits in well with the (Cs) findings. High scorers are described as pleasure seeking, relaxed, self-confident, sharp, witted, uninhibited and versatile.

High (Sa) self-acceptance scores round out this aspect of the athlete profile by showing those who would be seen as secure and sure of themselves, but who are also often egotistical, opportunistic and self-seeking along with the outgoing, polished, enterprising side of this scale.

The (Ie) score was also increased significantly for these boys and it also indicates an advance by the athlete in feeling capable, confident, efficient, independent, intelligent, self-controlled and unaffected.

The lowest scores on the athlete post-test profile were (Sc) self-control, (Ac) achievement via conformance and (Fe) femininity, all of which are consistent with the high CPI scores elsewhere. These low scores yield adjective descriptions similar to the high (Sa) score. The adjectives associated with this profile pattern include conceited, individualistic, self-seeking, temperamental, pleasure seeking, reckless, show-off, aggressive adventurous, daring, impulsive, masculine, outgoing and strong.

It is interesting to notice that on the basis of these separate CPI scales the adjective descriptions of the profile developed for the athlete, even at the junior high level, fits so closely the stereotype associated with older athletes.

For the athletes, the (Sa) self-acceptance score was higher on the post-test administration indicating those who have a comfortable and imperturbable sense of personal worth and are seen as secure and sure of themselves whether active or inactive in social behavior. This score also indicates those sometimes seen as demanding, egotistical, opportunistic and bossy. Self-confidence and determination also are evident in these people. The higher (Ie) score also tends to confirm this pattern for the athletic boys since it shows those able to easily and efficiently direct their efforts and apply abilities. They are self-confident, self-assured, not overly sensitive and respect intellectual pursuits.

The profiles for the underdeveloped boys who received counseling had significant differences on three scales that the other groups did not have. Since high scores in (Cm) communality and (Ie), however, have been discussed earlier for both the underdeveloped boys and the athletes, further discussion here will be omitted. (Wb) sense of well-being, (Py) psychological mindedness and (Fx) flexibility were scales on which the counseled boys evidenced the greatest gains. Table eight and Figures six and seven contain the data and profiles for this subgroup.

The (Wb) sense of well-being gain made by the counseled boys was the greatest single scale gain made by any of the separate subgroups on the CPI scales. It should also be noted that both the underdeveloped boys and the counseled boys had significant change on the (Wb) scale after the self-evaluation program was over. The higher level (Wb) scores indicate a sense of good health and a feeling of being equal to the demands for time and energy that are encountered in everyday social living. Low scores, conversely, betoken a feeling of unwillingness in facing interpersonal demands. High scorers are seen as better humored

FIGURE 6

CPI PRE-TEST MEAN PROFILE FOR COUNSELED UNDERDEVELOPED BOYS

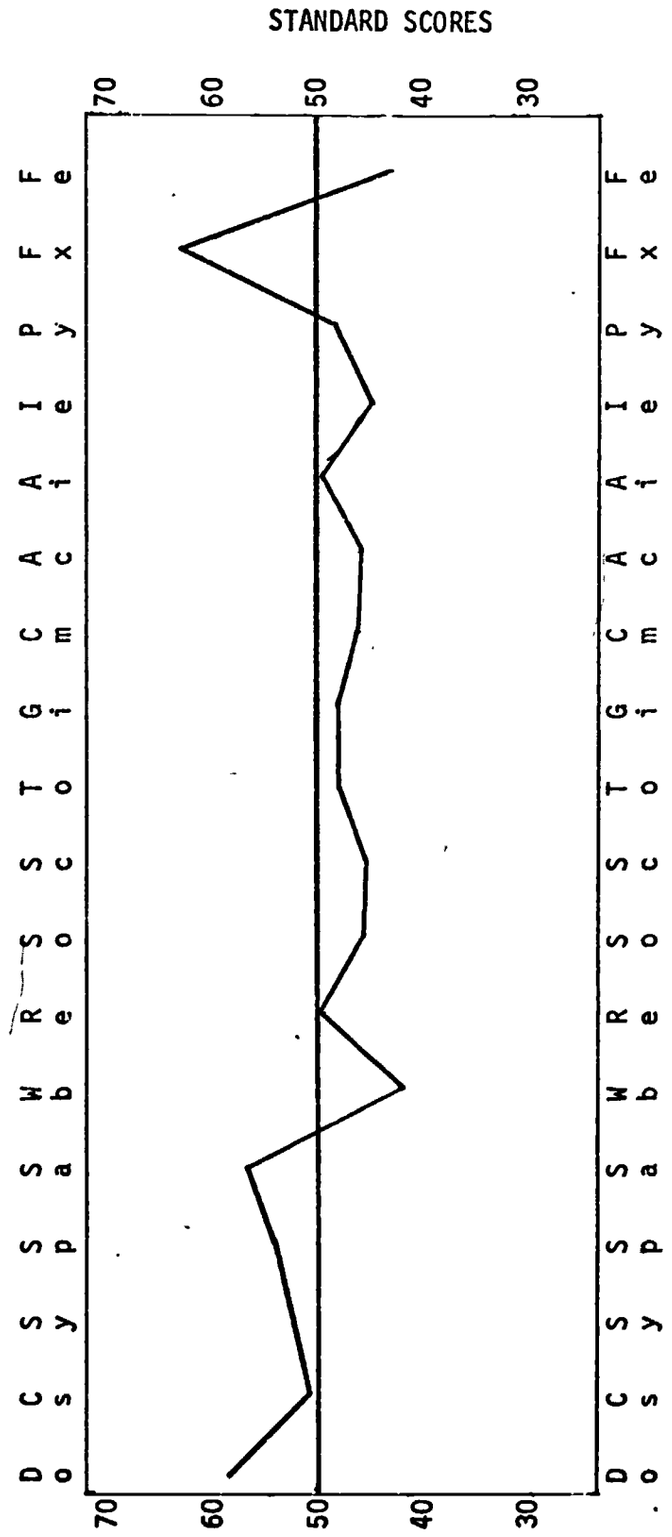

FIGURE 7

CPI POST-TEST MEAN PROFILE FOR COUNSELED UNDERDEVELOPED BOYS

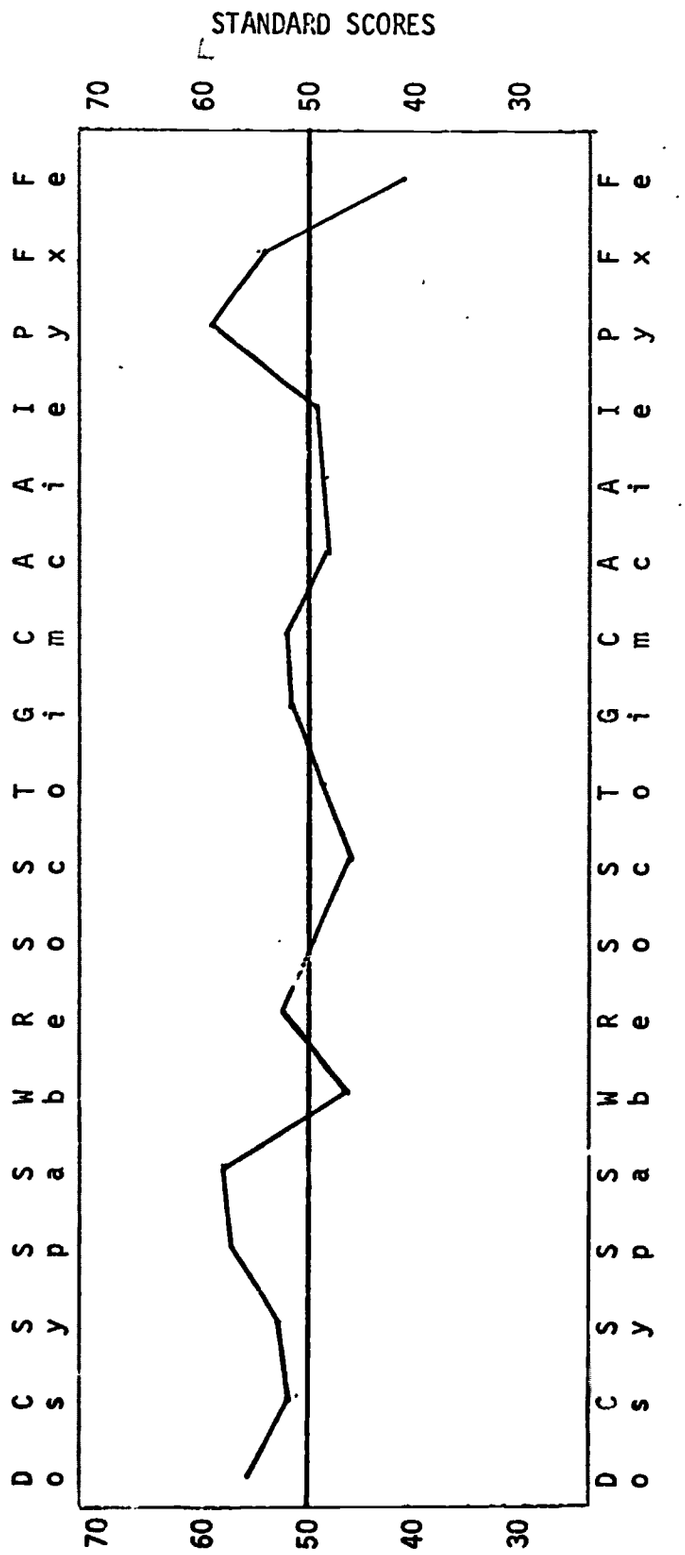

TABLE 8

MEANS AND STANDARD DEVIATIONS ON THE CALIFORNIA PSYCHOLOGICAL INVENTORY FOR UNDERDEVELOPED COUNSELED GROUP

CPI SCALES	PRE-TEST $\bar{X}$	PRE-TEST SD	POST-TEST $\bar{X}$	POST-TEST SD
Do	27.23	8.45	24.61	7.28
Cs	14.08	4.64	14.38	5.03
Sy	21.38	5.52	21.31	6.08
Sp	31.84	4.78	33.23	3.49
Sa	19.31	3.03	19.46	3.67
Wb	26.23	8.14	30.54	7.14*
Re	25.99	6.84	27.07	6.51
So	31.69	6.63	33.99	8.43
Sc	20.61	8.79	21.54	9.02
To	16.54	5.73	16.38	6.18
Gi	12.23	6.92	13.54	8.18
Cm	22.69	3.26	24.92	2.76*
Ac	19.69	6.96	20.61	7.37
Ai	13.99	4.12	13.54	3.63
Ie	29.15	5.24	31.84	6.04*
Py	7.77	3.39	10.23	2.45*
Fx	11.31	3.45	8.23	2.13*
Fe	15.61	3.36	15.23	3.62

*Significant at .01 level

and more fair-minded, but there is a hint of greater conformity and conservatism. The high scorer on (Wb), it would seem, is comfortable enough with himself and his status, but is perhaps too obliging and passive to innovate or take decisive action.

The increase in the (Py) psychological mindedness scale shows a trend toward becoming incisive and discerning, but since the score is still below the standard score mean indicates that the (Wb) interpretation presented by Gough is probably borne out by this scale as well High scores identify individuals who are psychologically oriented and

insightful concerning others. While the junior high boys, as a whole, still need growth in these two scales, it is encouraging to see the definite increase for the counseled boys.

The final scale that the counseled boys had significant change on that the other subgroups did not was (Fx) flexibility. This scale had a fairly sharp drop in the post-test score which indicates growth in the more desirable direction. High scores indicate a tendency to be flexible and adaptable even to the point of a changeable temperament, while lower scores indicate more of a determined, efficient, organized, practical view.

The changes in the three scales just discussed (Wb), (Py) and (Fx) along with the degree of change on these CPI scales tends to indicate that the additional encouragement received from the program instructor by these boys did have an effect on this subgroup.

Comparisons of the underdeveloped boys and the athletes profiles produced these basic differences. The pre-test CPI differences on the (Sy) sociability scale indicate that while the athletes were of an outgoing, participative temperament, who seek out and enjoy social encounter, the underdeveloped boys avoided involvement and tended to fear and dislike social visibility.

The low (Sa) self-acceptance scores showed the underdeveloped boy as more ill at ease, discontented with his status and inclined to find fault in others while being a complainer, a quitter and withdrawn. The athletes on the other hand were seen as more self-confident, outgoing and comfortable with a sense of personal worth and sureness of self.

The two groups also show a pre-test contrast on the (Sc) self-

control scale with the underdeveloped boys appearing as over controlled with too much suppression of impulse, and with dampened restraint of individuality. The athletes, meanwhile, were undercontrolled with quick and explosive responses to frustration and annoyance. The low scorer (athlete) is also seen as tending to act aggressively against threat or interference.

The higher (Cm) communality scores showed that the athletes were more in tune with their peers and surroundings and perceived as their peers did to form sound, stable, sensible impressions. Low scores, however, indicate a more stereotyped response with a tendency to personalize experiences as being unlike those of other people.

After the self-evaluation program had been concluded with the underdeveloped boys the athletes were still more self assured and poised, but the CPI scores of the underdeveloped boys had also moved above the mean standard score for all of the CPI scales indicating poise and self-assurance. The following post-test findings show that while the athletes were significantly above the underdeveloped boys on the scales (Cs) capacity for status, (Sp) social presence and (Sa) self-acceptance that both subgroups possessed the qualities of ambition and self-assurance that underlie and lead to status. Both groups were also uninhibited, outgoing, self-confident and relaxed according to the time when the post-test was given as shown by the (Sa) scores. The high (Sa) scores confirm this profile description with adjectives such as confident, enterprising, self-confident, imaginative and outgoing. The element of egocentrism, however, is attached to much higher (Sa) scores. Therefore, coupled with the self-confidence and determination are the less desirable variables of narcissism and indifference to others as the

scores on (Sa) are greater. Tables nine and ten show the post-test score differences just discussed. The final scale in the post-test comparison of the athletes and underdeveloped boys was the (Fe) femininity scale. The lowered (Fe) score shows less negative connotations of weakness, nervousness, and dissatisfaction with a more masculine, aggressive outlook on life. This positive overall profile for the underdeveloped boys after the self-evaluation program is viewed as a very encouraging outcome for the use of self-evaluation.

INTERPRETATION OF THE PHYSICAL DATA

Analysis of the before and after physical capabilities of the underdeveloped boys showed that the seventh grade boys had significant gains at the end of eight months of weight-lifting and body building in eight of the ten development areas on which self-evaluation data was recorded. Table eleven shows that significant gains were made in the areas of bench press, standing press, chinning behind the neck, incline curls, dips, sit-ups, jumps and squats. It should be noted that in push-ups and pull-ups, two of the more conventional measures of strength that no significant growth was experienced by the seventh grade boys. The greatest gains were made in the bench press (24.7 lbs), the standing press (11.5 lbs), the sit-up (plus 18.5) and the squats (plus 20).

The eighth graders showed the smallest amount of overall gain of any group in the program. They had significant gains in only four development areas. The standing press (9.3 lbs), the chin behind the neck (plus 2.4), sit-ups (plus 4) and push-ups (plus 11.7). The gains made by the eighth grade boys were of a smaller magnitude than those experienced by the seventh and ninth grade boys. Table twelve shows

TABLE 9

MEANS AND STANDARD DEVIATIONS ON
THE CALIFORNIA PSYCHOLOGICAL INVENTORY
FOR UNDERDEVELOPED AND ATHLETIC BOYS

CPI SCALES	UNDERDEVELOPED BEFORE $\bar{X}$	SD	ATHLETIC BEFORE $\bar{X}$	SD
Do	22.80	5.66	23.43	5.53
Cs	12.88	3.68	13.08	3.88
Sy	20.22	5.12	22.16	4.96*
Sp	29.41	5.79	31.96	5.54
Sa	17.96	3.90	19.73	3.94*
Wb	28.53	7.29	29.00	6.94
Re	26.10	6.29	25.69	5.53
So	33.57	6.68	33.45	4.83
Sc	21.55	7.79	19.35	6.76**
To	14.58	5.29	14.06	4.2[illegible]
Gi	12.07	5.67	10.71	4.86
Cm	24.39	3.54	25.78	2.15*
Ac	19.61	5.44	20.18	4.53
Ai	12.42	4.43	12.26	3.63
Ie	29.11	5.99	29.33	5.08
Py	9.02	2.61	9.51	2.47
Fx	7.80	3.48	7.57	3.12
Fe	16.34	3.53	15.94	3.05

*Significant at .01 level

**Significant at .05 level

TABLE 10

MEANS AND STANDARD DEVIATIONS ON
THE CALIFORNIA PSYCHOLOGICAL INVENTORY
FOR UNDERDEVELOPED AND ATHLETIC BOYS

CPI SCALES	UNDERDEVELOPED AFTER $\bar{X}$	UNDERDEVELOPED AFTER SD	ATHLETIC AFTER $\bar{X}$	ATHLETIC AFTER SD
Do	23.71	5.86	25.35	6.07
Cs	14.02	4.19	15.94	3.45*
Sy	20.91	5.23	22.59	6.15
Sp	31.66	5.40	35.35	4.48*
Sa	18.41	3.81	21.47	3.55*
Wb	29.85	6.91	30.53	7.12
Re	27.05	6.11	25.18	5.79
So	35.91	6.48	35.41	7.18
Sc	23.33	8.07	20.12	8.56
To	16.44	6.05	16.24	6.50
Gi	13.01	6.16	11.70	5.79
Cm	25.31	2.99	25.76	2.51
Ac	22.05	5.88	21.94	5.98
Ai	14.16	4.48	13.01	3.84
Ie	32.67	6.43	32.59	7.00
Py	9.91	2.53	10.06	2.66
Fx	7.96	3.66	7.65	4.15
Fe	15.84	3.40	14.53	2.00*

*Significant at .01 level

TABLE 11

PRE-AND POST-TEST PHYSICAL MEASURES - SEVENTH GRADE

TYPE OF EXERCISE	PRE- TEST $\bar{X}$	PRE- TEST SD	POST- TEST $\bar{X}$	POST- TEST SD	AVERAGE INCREASE
Bench Press	44.0	10.67	68.7	17.38*	24.7
Standing Press	40.1	10.44	51.6	13.65*	11.5
Chin Behind Neck	0.6	1.51	1.47	3.12*	1.41
Incline Curls	5.0	2.44	11.8	2.58*	6.8
Dips	1.87	3.01	4.0	4.13*	2.13
Sit-ups	38.2	13.01	56.7	9.29*	18.5
Push-Ups	16.6	13.02	21.06	18.17	4.46
Jumps	9.9	2.53	11.0	2.36*	1.1 ft.
Squats	17.26	7.55	37.26	18.40*	20.0
Pull-ups	1.2	2.45	1.7	2.83	.5

*Significant at .01 level

TABLE 12

PRE-AND POST-TEST PHYSICAL MEASURES - EIGHTH GRADE					
TYPE OF EXERCISE	PRE-TEST $\bar{X}$	SD	POST-TEST $\bar{X}$	SD	AVERAGE INCREASE
Bench Press	75.7	18.09	82.7	16.46	7.0
Stand Press	57.7	14.66	66.0	13.42	9.3
Chin Behind Neck	1.6	2.83	4.0	3.51*	2.4
Incline Curls	13.1	4.44	13.9	3.46	.8
Dips	5.9	5.69	6.9	5.57	1.0
Sit-ups	52.8	12.24	66.8	11.06*	14.0
Push-ups	23.4	19.44	35.1	13.42*	11.7
Jumps	13.9	2.07	13.7	3.88	- .2 ft.
Squats	35.8	17.18	42.4	22.23	6.6
Pull-ups	3.5	5.20	5.8	4.64	2.3

*Significant at .01 Level

TABLE 13

PRE- AND POST-TEST PHYSICAL MEASURES - NINTH GRADE

TYPE OF EXERCISE	PRE-TEST $\bar{X}$	PRE-TEST SD	POST-TEST X	POST-TEST SD	AVERAGE INCREASE
Bench Press	78.0	23.79	104.3	21.88*	26.3
Standing Press	58.9	17.48	78.6	16.46*	19.7
Chin Behind Neck	1.8	2.51	2.9	2.69*	1.1
Incline Curls	14.9	1.93	20.5	6.67*	5.6
Dips	4.3	4.06	5.0	5.69	.7
Sit-ups	46.5	10.01	58.5	8.72*	12.0
Push-ups	24.3	17.58	30.9	13.01	6.3
Jumps	13.8	3.55	15.3	4.72	1.5
Squats	26.9	13.19	37.6	18.62**	10.7
Pull-ups	2.8	3.12	4.2	3.53	1.4

*Significant at .01 level.
**Significant at .05 level.

the pre- and post-test measurements of the eighth grade boys.

The ninth grade boys had significant gains in six of the ten exercise areas. Gains were made in the bench press (26.3 lbs.), the standing press (19.7 lbs), chin behind the neck (plus 1.1), incline curls (plus 5.6), sit-ups (plus 12) and squats (plus 10.7). The ninth grade boys made the greatest overall gains in weight lifting. Despite the gains that were made by the groups, it should be noted that the physical ability levels of the underdeveloped boys, as compared to normally used competitive standards, would not be rated very high. Table thirteen shows the development results in the ninth grade boys.

Examination of the correlations of the before and after performances by the underdeveloped boys were quite high, ranging from .94 to .99. This tends to indicate that the boys all grew and developed at about the same rates so that the rank order standing of a boy in a competitive group would have remained very static. This finding makes the self-evaluation environment appear more responsible for the change than other environmental possibilities. The self-awareness of personally experiencing their growth in these areas had more effect on the boys than the physical development itself. The physical variables did not show any strong evidence of having produced significant changes in the comparative abilities of the boys or their group standing which could have been clearly perceived by them.

SUMMARY

This chapter restates the setting of the study, the populations and samples involved, the data and instrumentation used, the general design procedures followed and a discussion of the various findings of the study. The findings presented were based on before and after comparisons of the

underdeveloped boys and the athletic boys subgroups. Factor analytic, "t" tests between the various pre-test and post-test score differences for the CPI scales, and the physical fitness measures for the underdeveloped boys were presented and discussed. Appropriate figures and tables were utilized to supplement the interpretation of the data.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

To establish an atmosphere for the purposes of this study, a special physical education curriculum, emphasizing self-evaluation and consisting of body building exercises and weight lifting, was used to create an environment to provide underdeveloped boys an opportunity to develop a more positive self-concept and sense of personal adequacy. Two hundred eight junior high school boys in grades seven, eight and nine were involved in the study.

Two groups of boys were formed by classifying the boys on the basis of either their athletic ability or lack of it. Both groups were administered the California Psychological Inventory (CPI) at the beginning of the academic school year in the fall and just before the school year ended the following spring. Lack of athletic ability was accorded to all the boys who failed the minimum physical fitness standards established and published in the handbook developed by the President's Council on Physical Fitness in 1961. These boys were called "underdeveloped" boys in this study. The boys in this group could just as well have been referred to as "slow maturers," however.

The fitness tests measured strength, flexibility and agility. Pull-ups were used to measure arm and shoulder strength, sit-ups measured flexibility and abdominal strength, and squat-thrusts were used to measure agility. Cardiorespiratory endurance was tested by using a half-mile run. One hundred and fifty-nine boys were identified as underdeveloped boys based on these tests.

Forty-nine boys who were actually participating, or scheduled to participate, on junior high school athletic teams which competed in interschool athletic competition with the other junior high schools in the region, were designated as the "athletic" group.

Following their identification as underdeveloped, the boys were enrolled in the special physical education program. At that time, additional physical measurements were taken relating to their weight, height, biceps, calves, etc., as well as additional strength measurements in the area of weight lifting. For some boys, all of the "slip-on" weights had to be removed before they were able to successfully lift the ten pound bar that weights are normally attached to.

After these baseline measurements were gathered, monthly self-evaluations were made by the boys themselves of their own personal growth in these various areas. Each month records were maintained of the amount of weight a boy could successfully bench press a certain number of times, the amount of weight that he could handle in a standing press, the number of incline curls, dips, sit-ups, push-ups, standing jump distances, squat-thrusts and pull-ups a boy could do.

Each boy was given his own checklist and was encouraged by the instructor to attempt to better his previous benchmark record. The emphasis in all of these measurement sessions was centered around self-evaluation of a boy's personal growth. No mention of competitive achievement against other boys was made at any time during the program.

From among the underdeveloped subgroup, thirty boys were selected, using a table of random numbers, to be given additional verbal encouragement each month by the instructor. Once each month, just after the measurements had been recorded, these thirty boys were talked to with

their record forms before them. Each boy was talked to individually and any improvement or growth was pointed out in detail to them by the instructor. The other underdeveloped boys were given their record forms each month at evaluation time to record their new levels of performance, but no additional, special encouragement was provided to them. Any boy could, however, see his own record form at any time he so desired; and if a boy questioned the instructor about his own progress, positive feedback and encouragement was given by the instructor.

Of the original two hundred and eight boys who completed the CPI in the fall, only one hundred and fifty-five were still available in the spring for retesting. Of that number, one hundred and twenty-eight were in the underdeveloped boys subgroup. The major cause of the population reduction was the opening of a new junior high school in the area. This new school opened in January, at the beginning of the spring term. Boys from both subgroups who were now assigned to the new school were dropped from the experiment at that time.

The eighteen CPI scales administered to the boys were submitted to the Western Data Processing Center located at UCLA. A principle - component factor analysis program was processed on the IBM 7094 Computer at that facility. When the factor analysis data were examined, the findings of this study closely parallelled the general findings of other investigators who factor analyzed the CPI. This was true of the athletic boys on both the pre- and post-test and the underdeveloped boys on the post-test.

The pre-test factor analysis of the underdeveloped boys, however, did not fit the earlier factor findings. After the self-evaluation program was completed, however, the post-test factor analysis pattern of

the underdeveloped boys also had high agreement with the earlier factor studies.

Examination of the CPI pre-test factor analysis findings indicates that the underdeveloped boys perceived themselves differently from the athletes in the areas of both social conformity and self-acceptance at the time the CPI was first administered. On the basis of the factor analysis and the significant pre-test differences between the underdeveloped boys and the athletes on the CPI scales, (Sy) sociability, (Sa) self-acceptance, (Sc) self-control and (Cm) communality, Hypothesis 1 which stated that prior to involvement in the self-evaluation program, the underdeveloped boys will not differ in self-concept from the athletes was rejected.

At the end of the self-evaluation program, however, the factor analysis findings for the underdeveloped boys and the athletes was basically the same. In addition, the underdeveloped boys had significant gains on the scores for ten of the eighteen CPI scales. The athletes, during the same period, had gains on only four of the CPI scales. Based on these findings, Hypothesis 2, which stated that the post-test personality profiles of the underdeveloped boys would not differ significantly from their CPI profiles before participating in the self-evaluation program, was rejected on the basis of the factor analytic outcomes and the ten CPI scales which had significant mean-score differences between the two administrations of the CPI.

On the basis of the CPI scale comparisons between the post-test results for the counseled boys and those underdeveloped boys not receiving additional encouragement Hypothesis 3, which stated that the post-test CPI profiles for these subgroups would not differ significantly,

was accepted.

Hypothesis 4, which stated that at the end of the program the two subgroups, athletes and underdeveloped boys, would not differ in the composition of their post-test CPI profiles, was accepted.

It was stated in Hypothesis 5, that the personality profiles of the athletic boys would not differ significantly between measures taken in the fall and in the spring. This hypothesis was accepted on the basis of the factor analysis findings and the fact that even though the athletes had gains in (Cs) capacity for status, (Sp) social presence, (Sa) self-acceptance and (Ie) intellectual efficiency, the basic profile did not change since even though all of these areas increased, their position remained relatively stable in the overall CPI profile.

The athletes on those scales relating to intrapersonal controls, values, styles, and beliefs had a lower and less balanced final profile. Those scales which comprise the CPI unit having relevance to academic counseling and guidance showed an overall gain in the entire unit only for the underdeveloped boys. This was an encouraging finding since high scores on these scales have been shown in other studies to relate to success in high school achievement. The various scales related to drive and ambition also increased for the underdeveloped boys. This growth was manifestly evident to both teachers and counselors who related their personal observations of the underdeveloped boy in discussions with the investigator during the spring term at the conclusion of the self-evaluation program.

CONCLUSIONS

The findings of this study, where an effort was made to establish an environment where underdeveloped boys used baseline data drawn from

their own personal performance levels for self-evaluation of their own growth, developments, and achievements coroborate the earlier contentions of Rogers[99] that--

> ... self-evaluation appears to be the logical procedure for discovering both those ways in which experience has been a failure and those ways in which it has been meaningful and fruitful. ...The person most competent to perform this task would appear to be ...the learner, who has been the center of the process.

While this study was not related to academic subject matter, further study should be conducted to determine the application of self-evaluation environments in academic areas. It is quite possible that students who are experiencing negative self-acceptance and low sense of personal worth based on externally imposed academic standards and perceived intellectual inability, if enrolled in a self-evaluation curriculum, will show similar responses to those made by the underdeveloped boys in this study.

None of the underdeveloped boys in this study turned into "Charles Atlas" types during the eight months of the study. These boys actually did not look much more physically developed at the end of the program than they did at its beginning. The gains experienced by the underdeveloped boys were more internal than external and their more positive self-concept resulted as at least one aspect of their environment allowed for perceiving self growth.

Duel[100] found that students, given the opportunity, made reliable self-judgments concerning gains in skills and knowledges in technical

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[99] Rogers, loc. cit.

[100] Henry J. Duel, A Study of Validity and Reliability of Student Evaluation of Training. (Unpublished doctoral dissertation, Washington University, St. Louis, Missouri,) June, 1956.

courses. His study also indicated that self-evaluation by students can be accomplished effectively at the action level. Duel concluded, and this investigator concurs, that one of the greatest voids in the research related to self-evaluation is research which indicates what effect self-evaluation may have in the promotion of greater overall growth and development in the student allowed to participate in this type of learning environment.

RECOMMENDATIONS

Further studies, especially in academic subject matter areas, should be conducted to investigate the feasibility and general applicability of using self-evaluation environments especially in remedial programs. This will allow remedial students to realize personal growth and achievement free from the pressure of externally imposed standards. Such standards have already begun to hamper their development because of felt or experienced self-inadequacy and hopelessness in meeting those external standards.

Public school curriculum should be studied to determine what areas of study can be readily adapted to use student self-evaluation similar to the self-evaluation environment discussed in this study. Student growth and development promoted by the teaching conducted in such environments could be evaluated by focusing on the real objective of teaching--student change, both in performance and self concept.

It seems obvious that initially self-evaluation studies should be confined to curriculum areas where course objectives can be defined most clearly and which contain items and elements which will lend themselves to self-evaluation by students for experiencing self-growth and achievement.

While tnis study does not attempt to answer the question of how broadly curriculums should be expanded to provide for student-centered self-evaluation environments, it does raise the question of, "What is the legitimate place of self-evaluation in the school curriculum in subject matter areas?" This study also supports the earlier recommendations of both Rogers[101] and Russell[102] that students do benefit from more participation in evaluating their own growth and achievement.

The following points offered by Moustakas[103] as principles which help to create a climate conducive to responsible self growth are provided for consideration in any future research efforts.

1. The individual knows himself better than anyone else; only he lives with himself twenty-four hours of every day.

2. The individual's perceptions and expressions of his own feelings, thoughts, and experiences are a more valid avenue of relatedness to him than any outside diagnosis or evaluation.

3. Only the person himself can develop his potentialities, no matter how fervently and exhaustively another person may wish to do this for him.

4. The individual to keep on growing as a self, must continue to believe in himself regardless of what anyone else may think about him. The belief in a reality is a primary factor in the fulfillment of that reality.

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[101]Rogers, loc. cit.

[102]Russell, loc. cit.

[103]Clark Moustakas, Personal Growth, The Struggle for Identity and and Human Values (Cambridge, Massachusetts: Howard A. Doyle Publishing Company, 1969), p. 23-24.

5. Objects have no meaning in themselves. Individuals ascribe meanings to them, meanings that reflect a unique background of experience.

6. Every person is logical in the context of his own personal experience and the values he has created out of these experiences. He may seem illogical to others when he is not understood his own world of thought and feeling.

7. When the teacher accepts and values the student as a whole person, the student will perceive this as an affirmation of himself and will use his energies in exploring and actualizing himself. When he is rejected and forced into a meaningless existence, he will use his resources in maintaining and defending himself, even if that self is alienated.

8. Growth of the self does not require calculated and planned external motivation from the teacher. These growth strivings are present at all times and constitute the one central tendency in each man.

9. Under externally induced threat, the basic striving for self-actualization is impaired, the self is passive, controlled, and inauthentic. Freedom from externally imposed threat, freedom to be (which may itself involve pain and frustration), enables the self to be open to life and to strive toward actualization.

10. The educational situation that most effectively promotes significant learning is one in which (a) the external threats to the self of the learner, such as rejection, criticism, evaluation, reward, and punishment, are at a minimum, while, at the same time, the individuality and uniqueness of the person are valued, respected and trusted; and, (b) the person is free to explore the materials and resources that are available to him in the light of his interests, potentialities, and

readiness.

As Brown[104] has said, man is capable of growth and maturity, but he must have a place and an opportunity and of our social institutions [illegible]ducational system, at least, must change its ways and become a major contributor toward that end.

Based on the findings of the research in this paper, which indicate that participation in an environment using self-based evaluation standards, rather than competitively based standards, contributed to gains in emotional security and increased sense of personal worth, environments that allow for periodic self-evaluation should be explored for other disadvantaged groups. Perhaps this is the research Kvaraceus[105] was lacking.

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[104]Brown, loc. cit.

[105]Kvaraceus, loc. cit.

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APPENDIX A

ADDITIONAL MEANS AND STANDARD DEVIATION TABLES

TABLE 14

MEANS AND STANDARD DEVIATIONS ON
THE CALIFORNIA PSYCHOLOGICAL INVENTORY
FOR UNDERDEVELOPED AND COUNSELED BOYS

CPI SCALES	UNDERDEVELOPED BEFORE $\bar{X}$	SD	COUNSELED BEFORE $\bar{X}$	SD
Do	22.80	5.66	27.23	8.45*
Cs	12.88	3.68	14.08	4.64*
Sy	20.22	5.12	21.38	5.52
Sp	29.41	5.79	31.84	4.78*
Sa	17.96	3.90	19.31	3.03
Wb	28.53	7.29	26.23	8.14**
Re	26.10	6.29	25.99	6.84
So	33.57	6.68	31.69	6.63
Sc	21.55	7.79	20.61	8.79
To	14.58	5.29	16.54	5.73
Gi	12.07	5.67	12.23	6.92
Cm	24.39	3.54	22.69	3.26
Ac	19.61	5.44	19.69	6.96
Ai	12.42	4.43	13.99	4.12
Ie	29.11	5.99	29.15	5.24
Py	9.02	2.61	7.77	3.39
Fx	7.80	3.48	11.31	3.45*
Fe	16.34	3.53	15.61	3.36

*Significant at .01 level.
**Significant at .05 level.

TABLE 15

MEANS AND STANDARD DEVIATIONS ON
THE CALIFORNIA PSYCHOLOGICAL INVENTORY
FOR UNDERDEVELOPED AND COUNSELED BOYS

CPI SCALES	UNDERDEVELOPED AFTER $\bar{X}$	SD	COUNSELED AFTER $\bar{X}$	SD
Do	23.71	5.86	24.61	7.28
Cs	14.02	4.19	14.38	5.03
Sy	20.91	5.23	21.31	6.08
Sp	31.66	5.40	33.23	3.49
Sa	18.41	3.81	19.46	3.67
Wb	29.85	6.91	30.54	7.14
Re	27.05	6.11	27.07	6.51
So	35.91	6.48	33.99	8.43
Sc	23.33	8.07	21.54	9.02
To	16.44	6.05	16.38	6.18
Gi	13.01	6.16	13.54	8.18
Cm	25.31	2.99	24.92	2.76
Ac	22.05	5.88	20.61	7.37
Ai	14.16	4.48	13.54	3.63
Ie	32.67	6.43	31.84	6.04
Py	9.96	3.66	8.23	2.13
Fe	15.84	3.40	15.23	3.62

*Significant at .01 level (NONE).

TABLE 16

MEANS AND STANDARD DEVIATIONS ON THE CALIFORNIA PSYCHOLOGICAL INVENTORY FOR COUNSELED AND ATHLETIC BOYS

CPI SCALES	COUNSELED AFTER $\bar{X}$	COUNSELED AFTER SD	ATHLETIC AFTER $\bar{X}$	ATHLETIC AFTER SD
Do	24.61	7.28	25.35	6.07
Cs	14.38	5.03	15.94	3.45
Sy	21.31	6.08	22.59	6.15
Sp	33.23	3.49	35.35	4.48
Sa	19.46	3.67	21.47	3.55
Wb	30.54	7.14	30.53	7.12
Re	27.07	6.51	25.18	5.79
So	33.99	8.43	35.41	7.18
Sc	21.54	9.02	20.12	8.56
To	16.38	6.18	16.24	6.50
Gi	13.54	8.18	11.70	5.79
Cm	24.92	2.76	25.76	2.51
Ac	20.61	7.37	21.94	5.98
Ai	13.54	3.63	13.01	3.84
Ie	31.84	6.04	32.59	7.00
Py	10.23	2.45	10.06	2.66
Fx	8.23	2.13	7.65	4.15
Fe	15.23	3.62	14.53	2.00

APPENDIX B

PRE- AND POST-TEST CORRELATION COEFFICIENTS FOR THE CPI

TABLE 17

CORRELATIONS OF PRE- AND POST- CPI SCORES

CPI SCALE	UNDERDEVELOPED BOYS	ATHLETES
Dominance	.58	.63
Capacity for Status	.49	.48*
Sociability	.73	.82
Social Presence	.39	.63
Self Acceptance	.46	.84
Sense of Well-Being	.74	.77
Responsibility	.80	.74
Socialization	.82	.64
Self-Control	.64	.85
Tolerance	.77	.74
Good Impression	.61	.70
Communality	.75	.74
Achievement via Conformance	.67	.31*
Achievement via Independence	.71	.56
Intellectual Efficiency	.65	.73
Psychological Mindedness	.48	.43*
Flexibility	.47	.54
Femininity	.54	.21*

*Not Significant at .01 or .05 Level.

APPENDIX C

FACTOR MATRIX FOR CPI

TABLE 18

FACTOR MATRIX (CPI)
UNDERDEVELOPED BOYS PRE-TEST

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	58	62	29	45	38	51	35	32	46	48	16	53	29	50	50	-14	15
2		54	39	34	42	43	26	26	58	46	12	49	52	51	42	13	06
3			55	60	45	46	38	28	48	45	32	57	34	61	50	-08	11
4				63	41	18	20	02	42	07	21	26	42	49	40	22	-02
5					37	34	35	06	32	13	32	37	32	46	34	00	09
6						60	68	71	75	54	52	66	60	75	45	22	21
7							67	59	63	48	61	68	57	69	46	13	44
8								66	54	52	67	66	42	68	38	04	39
9									64	78	39	72	50	59	39	08	34
10										50	39	66	77	78	53	25	24
11											22	66	36	50	38	-10	33
12												42	35	52	34	13	32
13													60	74	57	04	33
14														68	46	36	21
15															55	20	25
16																13	15
17																	11

TABLE 19

FACTOR MATRIX (CPI)
ATHLETIC BOYS PRE- TEST

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	54	71	44	64	15	26	06	-12	23	05	22	37	-04	42	39	-10	-02
2		66	68	55	39	20	-07	10	53	38	13	36	27	55	54	14	03
3			59	78	26	30	13	-04	33	25	10	46	04	69	52	-02	-04
4				55	37	08	-02	-08	40	14	14	33	26	53	38	05	-06
5					29	17	07	-16	33	08	16	31	15	61	47	09	14
6						47	46	58	76	42	26	48	64	68	42	15	-01
7							55	43	58	26	48	64	40	49	36	02	16
8								44	35	23	38	60	26	36	09	-08	24
9									56	72	-05	49	55	38	29	-03	-04
10										54	19	53	66	69	48	-24	-06
11											-25	33	35	42	33	-03	-11
12												32	08	24	28	03	26
13													42	62	42	-11	05
14														48	43	29	-04
15															62	04	-13
16																21	-02
17																	22

TABLE 20

FACTOR MATRIX (CPI)
UNDERDEVELOPED BOYS POST-TEST

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	54	71	43	68	42	46	34	27	52	37	18	55	40	57	42	-04	11
2		60	55	56	39	40	19	30	62	39	06	44	56	69	51	30	03
3			54	67	36	36	23	24	44	40	08	46	28	56	40	-09	-01
4				50	31	13	08	01	43	06	17	20	38	45	37	28	-28
5					22	24	17	04	36	14	13	29	26	45	24	04	-11
6						62	71	75	82	57	43	78	55	77	47	07	03
7							63	62	67	52	32	71	52	68	48	06	18
8								68	59	51	50	71	35	62	26	-18	24
9									71	83	24	80	48	65	41	-03	32
10										62	26	73	78	80	60	21	12
11											05	68	40	57	43	-10	30
12												32	11	30	19	-14	-02
13													53	80	48	-07	26
14														66	55	36	08
15															56	18	09
16																15	-02
17																	-21

TABLE 21

FACTOR MATRIX (CPI)
ATHLETIC BOYS POST-TEST

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	56	61	49	54	01	15	-02	-20	15	-01	-02	04	08	19	36	-10	16
2		61	61	59	26	51	01	10	52	15	29	31	47	56	68	20	08
3			74	85	02	24	-26	-14	24	-02	23	21	39	44	37	-09	13
4				63	-02	14	-42	-30	29	-01	05	07	26	56	60	-34	-04
5					-05	15	-26	-33	09	-28	15	04	38	37	31	-04	10
6						70	71	81	80	59	52	89	79	51	45	25	22
7							70	66	77	47	77	77	77	56	31	33	45
8								69	46	37	60	63	46	21	-08	43	39
9									70	77	53	85	64	34	19	44	33
10										55	44	87	79	60	59	02	27
11											36	62	46	41	23	20	32
12												68	69	48	07	41	31
13													89	54	39	26	33
14														67	46	30	21
15															42	36	27
16																-11	16
17																	12

APPENDIX D

CHARTS FOR RECORDING THE PHYSICAL GROWTH DATA

CHART 1

UNTERSEHER DEVELOPMENT SERIES							
PROGRESS CHART							
Measurement to be taken	Before Exercise	End of 1st Mo.	End of 2nd Mo.	End of 3rd Mo.	End of 4th Mo.	End of 5th Mo.	End of 6th Mo.
Height							
Weight							
Right Arm							
Left Arm							
Neck							
Chest							
Waist							
Right Thigh							
Left Thigh							
Right Calf							
Left Calf							

CHART 2

UNTERSEHER DEVELOPMENT SERIES						
STRENGTH CHART						
TYPE OF EXERCISE	End of 1st Mo.	End of 2nd Mo.	End of 3rd Mo.	End of 4th Mo.	End of 5th Mo.	End of 6th Mo.
1. Bench Press						
2. Standing Press						
3. Chin Behind Neck						
4. Incline Curls						
5. Dips						
6. Sit Ups						
7. Push Ups						
8. Jump						
9. Squats						
10. Pull-ups						

CHART 3

UNTERSEHER DEVELOPMENT SERIES

CONDITIONING PROGRAM			End of 2nd Mo.		End of 3rd Mo.		End of 4th Mo.		End of 5th Mo.		End of 6th Mo.	
Exercise	Area of Anatomy	Equip. Used	Wt.	S/R	St.	S/R	St.	S/R	Wt.	S/R	Wt.	S/R
Standing Press	Shoulder	Barbell										
Bench Press	Chest	Barbell										
Pull Overs	Chest	Barbell										
Rowing	Back	Lat Machine										
Cleans	Back	Barbell										
Curls	Biceps	Dumbell										
Triceps Press	Triceps	Barbell										
Sit Ups	Stomach	Incline Board										
Thigh Press	Thigh	Leg Press Machine										
Toe Raises	Calves	Calf Mach.										

S = Sets R = Repetitions Wt. = Weight

APPENDIX E

LISTING OF THE BODY BUILDING EQUIPMENT USED IN THE SELF-EVALUATION PROGRAM

PHYSICAL EQUIPMENT

Physical Education facilities are available through the co-operation of Colorado School District No. 6 at Heath Junior High School. (6,656 sq. ft. of space are allotted for the corrective physical education program). Body building equipment for the study is composed of:

1	Martin O. H. Pulley (complete)
1	Martin O. H. Dorsi Machine (complete with 40 plates)
3	Martin Incline Benches
2	Martin Prone Bench
6	Martin Flat Benches
1	Set Squat Racks
1	Leg Extension and Curl Machine Martin
1	Martin Island Barbell Rack
1	Martin Leg Press Machine
1	Martin Combination Dep and High Bar
1	Roman Chair
1	Double Calf Machine
40	Barbells
50	Dumbells
	6,000 lbs. Assorted Weights
1	Jackson Curling Bar w/2 Collars
1	20 Martin Dumbell Rack
1	Martin Wall Type O. H. Pulley
5	Leg Press Plates (weight unknown)
1	Fairbanks - Morse Health Scale
1	Set Up Rack

2	Set Up Boards (padded)
1	Olympic Weight Lifting Bar with 350 lbs.
1	Isometric Rack
1	Level Towing Bar
2	Iron Shoes