AN INVESTIGATION OF THE RELATIONSHIP BETWEEN INTELLIGENCE
SELF-CONCEPT, AND SOCIAL COMPETENCY AMONG THE MENTALLY RETARDED

APPROVED:

[Signatures and names]

Major Professor

Minor Professor

Chairman of the Department of Psychology

Dean of the Graduate School
Terrill, Nolan Allan, *An Investigation of the Relationship Between Intelligence, Self-Concept, and Social Competency Among the Mentally Retarded*. Master of Science (Clinical Psychology), December, 1972, 57pp., 7 tables, bibliography, 75 titles.

The problem under investigation in this study dealt with the numerous occasions in which a retarded child of lesser intellectual capacity out-performs a more capable child. This phenomenon could be due to differences in the self-concepts of the mentally retarded. In order to investigate this problem effectively, the interrelationship of intelligence, self-concept, and some measure of performance must be studied. The measure of performance used in this study was the *Cain-Levine Social Competency Scale*, which measures various areas of social performance.

This study differs from previous research which claims that the relationship between I.Q. and self-concept is linear, whereas in this study it was hypothesized that the relationship would be found to be curvilinear, if the I.Q. range was extended low enough. A child with a lower I.Q. will have a higher self-concept and therefore out-perform the brighter child because he is not afraid to attempt new things.

The hypotheses for this study were (1) the relationship between intelligence and self-concept would be significant and curvilinear; (2) the relationship between intelligence and
social competency would be significant and curvilinear; (3) the relationship between self-concept and social competency would be significant and linear.

Thirty male subjects were selected from the Denton State School and placed in one of three groups according to their full-scale WISC I.Q.'s. Each group contained ten subjects of approximately the same age. The I.Q.'s for this study ranged from 40 to 69, with a ten-point range delineating each group.

The analysis of variance disclosed that the relationship between I.Q. and self-concept scores was non-significant. This result was contrary to those found in previous studies, and was postulated as being due to inadequacies in the WISC.

The data also suggest that the relationship between I.Q. and social competency is significantly linear, and not curvilinear, as hypothesized. This linear relationship was believed to be due to the high correlation between the Cain-Levine scale and other intelligence measures. The Cain-Levine may be another measure of intelligence.

An analysis of the data further suggests that the relationship between social competency and self-concept is negatively linear. The negative relationship between these two variables was explained as being due to the high relationship between the Cain-Levine and the WISC. It seems that both the Cain-Levine and the WISC were measuring the same behaviors. Therefore, the Cain-Levine scores behaved as did the WISC I.Q.'s in Hughes
study. This resulted in a similar linear relationship for the lower three groups. This finding lends support to the theory that intelligence and self-concept vary in a curvilinear fashion.
AN INVESTIGATION OF THE RELATIONSHIP BETWEEN INTELLIGENCE, SELF-CONCEPT AND SOCIAL COMPETENCY AMONG THE MENTALLY RETARDED

THESIS

Presented to the Graduate Council of the North Texas State University in Partial Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

Nolan Allan Terrill, B.S.

Denton, Texas

December 1972
# TABLE OF CONTENTS

**LIST OF TABLES** ................................................................. iv

**Chapter**

I. **INTRODUCTION** .......................................................... 1

   Statement of the Problem
   Definition of Terms
   Hypotheses

II. **REVIEW OF LITERATURE** ........................................... 8

   Summary

III. **METHODS AND PROCEDURE** ........................................ 26

   Subject
   Instruments
   Procedure

IV. **RESULTS AND DISCUSSION** ......................................... 34

   Results
   Discussion

V. **SUMMARY AND CONCLUSIONS** ....................................... 46

   Summary
   Conclusions

**BIBLIOGRAPHY** ............................................................... 51
LIST OF TABLES

Table                                                                 Page

I.  Mean Age and I.Q. Range of Groups ..................................  26

II. Means and Standard Deviations For Group I.Q.,
    Self-Concept and Social Competency Scores ...........  34

III. Correlation Coefficients .............................................  35

IV. Summary of Analysis of Variance of
    Self-Concept Scores .............................................  35

V.  Summary of Analysis of Variance of
    Social Competency Scores ........................................  36

VI. Mean, Standard Deviation, and t-Tests
    for Social Competency Scores .................................  37

VII. Analysis of Variance of Linear
     and Curvilinear Regression ..................................  38
CHAPTER I
INTRODUCTION

Since mental retardation is not a single etiological entity, it may result from a great variety of causal factors. It is the resultant condition of many compounding factors rather than a type of disease. Perhaps more important than consideration of the cause is the study of how the individual functions in society.

It has been estimated that for every institutionalized retardate there are at least six of the same level of intelligence, living and functioning effectively in the community (6). The question has arisen as to why it is that one child can function effectively and another of even greater intellectual capacity cannot (9). Could this discrepancy in the functioning of retardates be due to differences in social competence and self-concept rather than intelligence?

Holland (8) has stated that we have a good idea of how we appear to others as well as how we actually are. His two image classifications are an "exalted" and a "depreciatory" self-image. A child with a depreciatory self-image desires not to compete, hoping to avoid the anxiety of defeat. This can lead to the child's level of functioning below his level of ability. This, in conjunction with poor social adjustment, is one of the major reasons that a retarded child is placed
in an institution (3). Because of his inability to take care of himself in the manner of a normal child of his age, his dependency on the parents is increased, and he becomes more closely bound to his home and parents; therefore the average home of a retardate is not as conducive to his emotional growth as is that of the average child. Because the retardate's extreme dependency, poor socialization, and behavioral problems create a hardship for his family, they may choose institutionalization as the only alternative.

Once admitted to the institution, the retardate usually is destined to spend a number of years in a limited environment which frequently provides ineffective education. Perhaps this situation could be remedied by increasing knowledge pertaining to the interrelationships between intelligence, self-concept, and social competency of retarded children. Such information might be used to improve the child's socialization to such a level that he could be returned to the community more expeditiously.

Statement of Problem

The purpose of this study is to add to the body of knowledge concerning intelligence, self-concept, and social competency as related to the habilitation of retardates by investigating the following problem: what is the relationship between intelligence, self-concept, and social competency
among the mentally retarded?

Definition of Terms

1. **Mental Retardation**: According to the American Association on Mental Deficiency,

"Mental retardation refers to subaverage general intellectual functioning which originates during the development period and is associated with impairment in one or more of the following: (1) maturation, (2) learning, and (3) social adjustment (7, p. 26).

Edgar A. Doll's six criteria which are essential to a definition of mental deficiency include

(1) **Social incompetence**, that is, the functional inability to manage one's affairs with ordinary prudence, to sustain oneself economically without undue assistance from others, to discharge the ordinary responsibilities of citizenship.

(2) **Mental subnormality**, that is, a degree of intelligence so low as to make social incompetence as just defined likely and to identify that social incompetence as not being the result of physical disabilities, infirmity, or unfortunate social-economic circumstances.

(3) **Developmental retardation**, that is, arrested mental development in order to discriminate between the mental incompetence of mental deficiency and that of mental deterioration such as insanity or epilepsy.

(4) **A condition obtaining at maturity**, that is, a condition which is essentially incurable, which is not outgrown, and which is not essentially altered by treatment, training, or favorable social-economic circumstances except through habit formation and routine activities.

(5) **Of constitutional origin**, that is, a condition which has its roots in hereditary lack of potential for normal developmental attainment, or is a condition produced by untoward events (trauma, disease, deprivation) which so affect the physical organism as to render development to adult normal status unlikely.

(6) **Essentially incurable** (4).

2. **Self-Concept**: An individual's perception of his own
worth as a person.

3. **Social Competence**: The ability to maintain oneself without undue assistance from others, to function effectively and appropriately in inter-personal relationships; the development of particular skills, which will ultimately allow the child to achieve self-sufficiency and increased social responsibility.

4. **Intelligence**: An individual's ability "to act purposefully, to think rationally and to deal effectively with his environment" (12, p. 19).

**Hypotheses**

The hypotheses under investigation in this study were

1. The relationship between intelligence and self-concept would be
   A. Significant
   B. Curvilinear

2. The relationship between social competency and intelligence would be
   A. Significant
   B. Curvilinear

3. The relationship between social competency and self-concept would be
   A. Significant
   B. Linear
The reasoning behind these hypotheses is that a person is aware, within limits, of his abilities. The greater the differences between his abilities and the abilities of others, as measured by I.Q., the lower will be his self-concept. However, there will be a point on the intellectual continuum where the subject is no longer able to accurately perceive this difference because of his diminished perceptual ability. At this point his self-concept should again increase. Since people with a poor self-concept tend to withdraw, it is also possible that this may impede development of their social abilities. The lower the self-concept score, the lower their social competence score will be.

Previous studies in this area (5, 10, 11) have reported that the relationships are linear, but they failed to continue the I.Q. range low enough to pick up the curvilinear relationship hypothesized in this study.


CHAPTER II

REVIEW OF LITERATURE

The investigation of the relationship between self-concept and intelligence has been very limited (31). However, there has been a large number of studies investigating self-concept and academic achievement relationships. The positive relationship between intelligence and academic achievement has been well illustrated (9). Therefore academic achievement may be an indirect method of measuring intelligence. Perkins and Shannon report positive relationships between self-concept and achievement. Piers and Harris have reported a correlation of .32 between their self-concept scale and achievement when applied to elementary school pupils (34). Similar correlations as high as .36 have been reported by Coopersmith (11). Other positive correlations between self-concept and achievement include studies by Lekarcyk and Hill (26) and Walsh (45). According to Gorlow et al., "self-attitudes account in significant degree for retardates' motivation for and acceptance of the learning experiences to which they are exposed. Self-attitudes are therefore viewed as a major determinant of the behavior and perceptions of retardates" (17, p.549). Therefore it appears from these findings that there could be a relationship between the self-concept and intelligence. However, when more direct measures of intelligence are used, the results
are somewhat more confusing, as demonstrated in the following studies.

Comparisons of the **Piers-Harris Self-Concept Scale** with group I.Q. test scores have yielded coefficients of .169 and .251 (33). In comparing the same scale to WISC I.Q. scores, Eastman (13) obtained correlations ranging from .08 on the performance I.Q. to .50 on the WISC verbal I.Q. The authors of the **Piers-Harris Self-Concept Scale** have reported correlations with scores on the Otis ranging from -.04 to .36. Conflicting results similar to these have also been found within the same study (13). Correlations in the .70's between I.Q.'s and self-confidence were reported by Turney (44), and Gorlow et al. reported positive correlations of .68 in his study comparing self-attitude with WAIS I.Q.'s (17, p.550). Even a review of recent literature found no consistent relationship between favorability of self-concept and intellectual status. For instance, Ringness (36) came to the following conclusions:

1. Mentally retarded children more generally tend to overestimate success than do average or bright children.
2. Bright children tend to rate themselves more highly than retarded and average children, in that order.
3. Mentally retarded children have a less realistic self-concept than bright or average children.
4. The self-estimate varies not only with the child, but also with intelligence, sex, and situation.
5. Self-ratings of mentally retarded children are less reliable than those of average or bright children.

Fine and Caldwell (16) found that educable mentally retarded students between the ages of nine and thirteen had a tendency to rate themselves as good as or better than their classmates and
other children their own age. These authors concluded that the self-concepts of retarded children were inaccurate, unrealistic, and overly inflated.

Some writers claim that there is no evidence that retardates generally are maladjusted (19). Others state that it is very unusual to encounter a retarded child who presents no emotional maladjustment of moderate to severe degree (32). However, most evidence seems to indicate that retardates generally show some level of maladjustment (3, p. 459; 22; 37).

Some studies suggest that retardates are not so different from normals in regard to their concerns about themselves and in regard to the correlates of high self-esteem. For instance, Guthrie, Butler, Gorlow, and White (20) found that retarded women were concerned with the same things as normal women, such as popularity and sexual acceptability. The authors concluded that the self-attitudes and ideas expressed by the women have resulted from the feeling that they needed to be protected from past abuses. Gorlow, Butler, and Guthrie (17, p. 549) found that positive relationships exist between self-acceptance and intelligence, school achievement, and success in training programs and success on parole. This same study also reported that low self-concepts were common among those retardates who were separated from their parents at an early age.

A number of research studies support the contention that
there is a consistent relationship between low intelligence and low self-concept (5), and other investigations present supportive evidence (17, p. 549). However, these studies did not include subjects from the trainable I.Q. range.

Further studies have found that retardates tend to present a less favorable self-concept. Piers and Harris (34) came to this conclusion when using their recently developed self-concept scale. Piers and Harris claimed that these lower self-concept scores helped to validate their scale. However, Albizu-Miranda et al. (1) have found rather strong evidence of unfavorable self-concepts among the retarded, without using the Piers-Harris Scale. Another researcher, Edgerton (14), feels that retardates have a strong need to deny that they are retarded and to pass themselves off as normal. Snyder, Jefferson, and Strauss (38) found that a positive self-concept is strongly related to reading achievement and to favorable personality variables in general. Payne (30) stated that a student's self-concept is a functionally limiting and facilitating factor in academic performance, which interacts with motivation. Feldhusen (15) commented that a low anxious child has a better integrated self-concept. Snyder (37) found in a study of high-achieving versus low-achieving retardates that the mildly retarded group had a better self-concept, lower anxiety scores, and better personality scores. Snyder concluded that personality variables such as self-concept are highly important in determining the
extent to which retardates will achieve their intellectual potential.

This writer feels that two of these important variables are self-concept and social competency, and that if a child has a deficiency in these areas he may not perform as well as a child of even less intellectual potential. In general the literature has provided little definite information about retardates' self-concept (22, p. 147). Retardation has not as yet been shown to have any definite effect on the self-concept. The same is true of the effect of institutionalization and special class placement. Early research in the area of the effects of institutionalization has resulted in conflicting findings. Numerous studies have suggested that there are unfavorable effects of institutionalization upon young children. The institutionalized child has been found to be more handicapped than his non-institutionalized peers in various kinds of functioning, i.e. mental growth (39) in language development (40), and the ability to think abstractly (27, 47), and in emotional maturity and integration (4, 35).

Some unfavorable effects of institutionalization have been found at every level of intelligence, but most of these studies have dealt only with mildly retarded individuals. Most children now being admitted to institutions are at least moderately retarded, with I.Q.'s below 50, and many of them are profoundly retarded (43). Since few studies have investigated
the effects of institutionalization on moderately and profoundly retarded children, there is no way of evaluating the teaching programs offered at large state institutions. For instance, an institutional setting might be deleterious to an educable mentally retarded child, whereas such an environment might prove very adequate for a moderately retarded child with his slower rate of development. Cain and Levine (6) have stated that some of the major reasons why institutions fail to facilitate social competency are inadequacy of teaching methods and poor curricular content. Clausen suggests that perhaps the difficulties which retardates encounter in forming abstract concepts, integration, and vocabulary may be explained thus: "In an institutional setting such lack may conceivably result from less adequate experiences which would develop these abilities" (8).

Comparisons between normal children living at home and institutionalized retardates (18, 24, 41, 53) have indicated that many behavioral differences found between these two populations are related to institutionalization rather than to intelligence.

The social climate would be a factor in the child's performance on any task that is influenced by the child's motivation for social reinforcement. Before investigators attribute behavioral characteristics to the mentally retarded in general, they should take care to cross-validate their
findings not only in a non-institutionalized population but in a number of institutions as well.

More recent studies have revealed that length of institutionalization has no deleterious effect (52). This finding is consistent with considerable evidence that it is pre-institutional experiences and/or the process of institutionalization rather than institutionalization per se that is the determining factor in influencing the retardates' social development (2, 50, 51, 53). McAfee and Cleland (23, p.66) stated that "Length of residence in a state school appears to have little effect upon self-concept, ideal self, and discrepancy scores of educable mentally retarded males." Guthrie et al. found that institutionalized girls have a much more negative self-concept than girls who remain in their homes. "They see themselves as of less value and as more dominated by their own needs. . . . Some evidence is adduced that these reactions are not the result of the loss of freedom. It is probable that these attitudes play a significant role in the failure of these girls to adjust to society's demands" (21, p.547). Due to these more recent findings, it was felt that length of institutionalization has little to no effect upon the variables under study, and therefore this factor was not controlled.
In all probability anyone who has worked with the mentally retarded can cite examples of individuals who fail to achieve an I.Q. of 70 or more, but are still very capable of self care and of managing themselves and their own affairs. They also can cite examples of those who score well above 70, but are incapable of obtaining an education, holding a job, and staying within the bounds of socially desirable behavior. It should be noted in the practice of diagnosing retardates for institutionalization that two points are usually considered: first, does he conform to the general definition of the condition; and second, does his behavior justify official action? (7,p.58) The importance of social competence has been stressed by Doll (12). He considered the measurement of social competence as being of greater importance than intelligence testing. Young (48) found that social factors were of much greater importance in later success of the mentally retarded than academic abilities and achievement.

Snyder (37) has reported that there is a high positive relationship between academic achievement and adjustment. He also stated that retardates who have good personal and social adjustment, coupled with a favorable self-concept, will outperform their less well adjusted peers academically. According to Mercer et al (29), during school years social performance is closely related to intellectual performance of students with I.Q.'s above 85. However, Percival Symonds states,
"Intelligence has a low positive relationship to desired behavior. . . ." He continues by describing intelligence as the degree of competence with which a child adequately resolves his problems. "Intelligence, then, is a rough measure of adjustment; but the relation is not at all close, and it should be used only in connection with other evidences" (42,p.51).

These findings are of importance since the results suggest that differences in intelligence are inconsequential. Cain and Levine (10) have reported correlation coefficients in the low 20's between their competence scale and I.Q. scores when the two were compared directly. Cain and Levine (6,p.56) in a two-year study involving 132 trainable retardates came to several conclusions involving the development of social competence:

1) The community groups made the significantly greater progress than the institution groups. This finding, however, was contaminated by the fact that the community group was higher in initial status than the institution group.
2) Both the school and non-school institution and community groups made gains on pre- and post-ratings in social competency.
3) There were no significant differences in gain scores in social competency between the experimental (training group) and the controls in either institution or community settings.
4) Observation and analysis of the instructional program in the community experimental classes showed that the training program devoted a small portion of the classroom time to the development of social competence. Furthermore, the observations showed that a major portion of the class time was devoted to non-instructional activities—rest periods, recess, and free activity. These observations led the authors to conclude that placement in a special class for trainable children did not necessarily insure a systematic developmental and instructional program. This is due to the newness of the programs for trainable children and to the lack of knowledge on the
part of teachers and others concerning this group of children (25, pp. 66-67).

It appears from this survey of literature that social competency and self-concept may play a significant role in the extent to which the retardate maximizes his intellectual potential.

Most of the previously mentioned studies have dealt only with children of intelligence above the trainable level. The relationship between intelligence, self-concept, and social competency of trainable retarded children has received little attention to date. In fact, a review of the available literature has yielded only one such study. Hughes' study (23) claims to have found that the relationship between intelligence and self-concept is curvilinear. No studies have been found which have investigated the relationship between social competency and intelligence at the trainable level of retardation. In view of the dearth of information regarding this subject, there seems to be a need for information which might help contribute to the body of knowledge regarding the interrelationship of these three variables.

Summary

A review of literature found interesting, though sometimes conflicting, results in many recent studies involving the relationship between self-concept and intelligence. It was noted that many studies have been done that compared
self-concept with academic achievement, but few direct com-
parisons of self-concept with intelligence have been performed
to date. Those that have been completed reported correlations
between these two variables ranging from -.04 to .68. These
studies used various measures of intelligence and dealt only
with normal and mildly retarded subjects. Most studies of this
type contend that the relationship between intelligence and
self-concept is positively linear, and they presented convinc-
ing evidence of this relationship. However, the researchers
did not extend their I.Q. range to the trainable level. If
they had, they might have found a curvilinear relationship
similar to that found by Hughes.

The effects of institutionalization on self-concepts
has been a subject of concern for many years, judging by the
great volume of research in this area. Numerous studies
suggested that institutionalization has a deleterious effect
on children in many areas; e.g., mental growth, language develop-
ment, the ability to think abstractly, and emotional maturity
and integration. The majority of these studies were comparisons
of institutionalized children with non-institutionalized
retardates. More recent studies found that it was pre-
institutional conditions which actually led to institutional-
ization. The children who had to be institutionalized were
the ones who failed to develop and adjust to society's demands.

The review of research on social competency found noted
researchers such as Doll and Young agreeing that social competency is of much greater importance in the future success of a retardate than his innate intelligence. Snyder also agreed, adding that retardates with good self-concept and social competency scores definitely out-performed their less well-adjusted peers academically. Therefore, social competency and self-concept may play a significant role in the extent to which the retardate maximizes his intellectual potential. However, there is little research to date on how these variables interact at the trainable level of retardation. It was therefore suggested that a study of these variables at the trainable level would be valuable and contribute to the body of knowledge regarding the interrelationship of these three variables.
CHAPTER BIBLIOGRAPHY


9. Clausen, J., "PMA Subscores in Retardates and Normals: Pattern Scatter, Correlations, and Relation to Etiology," American Journal of Mental Deficiency, 70 (September, 1965), 243-244.

10. Combs, D. C., "The Interrelationships Among Anxiety, Intelligence, and Academic Achievement in College Students," unpublished master's thesis, Department of Psychology, North Texas State University, Denton, Texas.


CHAPTER III

METHODS AND PROCEDURES

Subjects

The subjects in this study were all males, whose ages ranged from nine through sixteen. The subjects were divided into three groups according to their full-scale WISC I.Q. scores. Each group contained ten subjects.

TABLE I

MEAN AGE AND I.Q. RANGE OF GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>I.Q. Range</th>
<th>Mean Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>60-69</td>
<td>14.9</td>
</tr>
<tr>
<td>II</td>
<td>50-59</td>
<td>14.7</td>
</tr>
<tr>
<td>III</td>
<td>40-49</td>
<td>14.6</td>
</tr>
</tbody>
</table>

The first two groups in Table I are within the range classified as Educable Mentally Retarded, while the third group is in the Trainable Mentally Retarded range (6). The authors of the Cain-Levine scale have reported a mild correlation with age and social competency scores. Therefore the age variability within each group was carefully controlled.
Unlike the previously mentioned study by Hughes, which investigated the relationship between intelligence and self-concept of two separate populations drawn from the public schools and from the Denton State School, this study drew its entire sample from the Denton State School. This was done to avoid any confounding effects which may occur when one is sampling from two diverse populations.

Instruments

In order to study the relationships between intelligence, social competence, and self-concept, reliable instruments are needed. The need for a reliable instrument to measure social competence has been cited frequently (1, 11, 12).

The most noted instrument to measure social competency is Doll's Vineland Social Maturity Scale (3), but it is inadequate for this study because it was standardized using normal children. Another measure, the Cain-Levine Social Competency Scale, is a recent one. It was standardized using mentally retarded children, and therefore is considered suitable for this study. Research has suggested that this scale should be used only when comparing retarded children, as this instrument is very sensitive to the difference between normal and retarded children (7).

The original standardization sample (2) produced internal consistency coefficients that ranged from .75 to .91 over all
age groups. Test-retest data was obtained by re-rating the subjects after a three-week interval. This yielded a reliability coefficient of .93. The authors of this scale reported a small positive correlation of .22 and .25 with I.Q. scores of male and female respectively. Due to its consistency and appropriateness to the population to be tested, the Cain-Levine scale was selected to be used in this study.

The **Cain-Levine Social Competency Scale** consists of forty-four items divided into four sub-scales: Self-Help, with 14 items; Initiative, 10 items; Social Skills, 10 items; Communication, 10 items. A child's social competency rating is obtained by interviewing those persons who have had the closest observational relationship to the child. The items in the scales are considered examples of socially competent behavior for a child in a home environment.

Although there are at present many scales which purport to measure self-concept, most of them were designed for adult populations of normal intelligence; therefore they involve abstract terminology and vocabulary which is too difficult for retardates. However, there is one self-concept scale, developed by Piers and Harris, which was specifically designed for children. Therefore the vocabulary is simple enough for retardates to comprehend. In the original standardization sample, the Spearman-Brown odd-even formula yielded coefficients of .87 and .90 for grades ten and six respectively. Piers and Harris
reported test-retest reliability coefficients of .72, .71, and .72 for grades three, six, and ten respectively. Wing (14) reported a test-retest coefficient of .77 over a four-month period in a study involving 244 fifth graders.

When Mayer (9) compared an earlier self-concept scale (8) with the Piers-Harris measure, he found a correlation of .68. The Piers-Harris Self-Concept Scale seems to be the most useful instrument for this study because of its simple vocabulary, adequate reliability, and validity.

The Wechsler Intelligence Scale for Children was used to measure the I.Q. of all subjects. It was necessary to use a single intelligence scale to avoid the difficulties that are associated with interscale differences.

Procedure

Thirty ambulatory male subjects were selected and their WISC I.Q. scores were obtained from their records. All subjects who were examined more than two years ago or had had some other intelligence scale administered to them were reexamined, using the WISC. Scoring difficulties were encountered in the computations of the I.Q. scores of the trainable retarded group. According to the WISC manual (13), the lowest full scale I.Q. score that can be obtained by a subject is 46. In order to receive a full scale I.Q. rating of 46 the subject has to have a scaled score of at least 26. Several of the subjects in the
trainable group failed to obtain a scaled score of 26. Therefore I.Q. ratings for these subjects had to be calculated, using Ogden's table of extrapolated WISC full-scale I.Q. scores (10).

The Piers-Harris Self-Concept Scale was administered to all subjects on an individual basis. The scale was administered orally by the examiner in order to eliminate the confounding effects which may occur due to errors arising from differences in reading ability. Various statements were reworded because of the findings of Hughes' pilot study.

In a preliminary pilot study it was found that the subjects were confused as to how to respond to the first-person statements, such as "I cry easily." It was found that they responded much more readily when the statements were put to them as a second-person direct question. This procedure necessitated the slight rewording of items sixty-five and seventy-one. Number sixty-five was changed to read "In games and sports, do you watch or play?" Number seventy-one was changed to read "Had you rather work alone or with a group?" The two items were scored correct for answering in the positive direction.

During the pilot study it was also noted that many of the children, in responding to items eleven and fifty, would smile proudly and answer in the wrong direction. It appeared that they did not comprehend the meaning of the negative prefixes to words such as "unpopular" and "unhappy." For this reason the prefixes were dropped (5, p.16).

The following week the Cain-Levine Social Competency Scale was administered to each retardate's houseparents according to the manual of instructions. The scale was administered to two houseparents for each child to avoid a halo effect. The scores were then averaged for each child to obtain his social competency rating.

In order to test for a significant relationship between
intelligence, self-concept, and social competency, a one-way analysis of variance was carried out (4). An F-ratio between Eta and the Pearson product-moment correlation coefficient was computed to evaluate the degree of curvilinearity.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

RESULTS AND DISCUSSION

Results

After the data was collected the mean and standard deviation were calculated for each group on each variable. These data are presented in Table II.

TABLE II

MEANS AND STANDARD DEVIATIONS FOR GROUP I.Q., SELF-CONCEPT AND SOCIAL COMPETENCY SCORES

<table>
<thead>
<tr>
<th>Group</th>
<th>I.Q.</th>
<th>Self-Concept</th>
<th>Social Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
<td>X</td>
</tr>
<tr>
<td>I</td>
<td>63.5</td>
<td>2.06</td>
<td>55.00</td>
</tr>
<tr>
<td>II</td>
<td>53.3</td>
<td>1.73</td>
<td>62.00</td>
</tr>
<tr>
<td>III</td>
<td>44.9</td>
<td>3.20</td>
<td>53.50</td>
</tr>
</tbody>
</table>

Table III contains the Eta and Pearson product-moment coefficients computed between the variables. The F-ratios were calculated to test for significance of curvilinearity.
TABLE III

CORRELATION COEFFICIENTS

<table>
<thead>
<tr>
<th>Variables</th>
<th>Intelligence</th>
<th></th>
<th>Self-Concept</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>Eta</td>
<td>F-ratio</td>
<td>r</td>
</tr>
<tr>
<td>Self-Concept</td>
<td>-.158</td>
<td>.368</td>
<td>.215</td>
<td>...</td>
</tr>
<tr>
<td>Social Competency</td>
<td>.55</td>
<td>.596</td>
<td>.106</td>
<td>-.248</td>
</tr>
</tbody>
</table>

The first hypothesis in this study stated that the relationship between intelligence and self-concept is curvilinear. An analysis of variance was carried out first to test for significant differences between the means of the three groups. The level of significance was set at .05. The results of this analysis are presented in Table IV.

TABLE IV

SUMMARY OF ANALYSIS OF VARIANCE OF SELF-CONCEPT SCORES

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>D.F.</th>
<th>Variance Estimate</th>
<th>F-level</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>245</td>
<td>2</td>
<td>122.50</td>
<td>1.8</td>
<td>NS</td>
</tr>
<tr>
<td>Within</td>
<td>1828.5</td>
<td>27</td>
<td>67.7222</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2073.5</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
From Table IV it can be seen that there was not a statistically significant difference between the means of the three groups. Although there was not a statistically significant difference between these means, the Pearson product-moment correlation was \(-.158\), with an Eta coefficient of \(.368\). This suggests the presence of a small degree of curvilinearity. The Eta coefficient is actually the measure of curvilinearity, whereas the Pearson product-moment value is a measure of linearity. The degree of discrepancy between these two is related to the size of the departure from linearity. The \(F\)-ratio between the Pearson product-moment correlation and the Eta coefficient was \(.215\), which also was non-significant.

The second hypothesis in this study stated that the relationship between intelligence and social competency is significant and curvilinear. The results of this analysis of variance are presented in Table V.

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>D.F.</th>
<th>Variance Estimate</th>
<th>F-level</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>65.62</td>
<td>2</td>
<td>32.81</td>
<td>7.42</td>
<td>.001</td>
</tr>
<tr>
<td>Within</td>
<td>119.34</td>
<td>27</td>
<td>4.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>184.96</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
From Table V it is apparent that the differences between the means of the three groups was highly significant. In order to establish where these significant differences were, three t-tests were calculated comparing each group with the others. These results are presented in Table VI.

**TABLE VI**

**MEAN, STANDARD DEVIATION, AND t-TEST FOR SOCIAL COMPETENCY SCORES**

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>161.00</td>
<td>12.7541</td>
<td>3.1977</td>
<td>.005</td>
</tr>
<tr>
<td>2</td>
<td>135.40</td>
<td>21.8693</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>161.00</td>
<td>12.7541</td>
<td>3.8013</td>
<td>.005</td>
</tr>
<tr>
<td>3</td>
<td>126.00</td>
<td>26.1746</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>135.40</td>
<td>21.8693</td>
<td>.8715</td>
<td>NS</td>
</tr>
<tr>
<td>3</td>
<td>126.00</td>
<td>26.1746</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An examination of Table VI indicates a possible linear relationship between intelligence and social competency. Because of this suggested relationship, the Pearson product-moment coefficient was calculated and found to be .55, which is significant at the .001 level. The Eta correlation ratio was found to be .596. The $F$-ratio between these two coefficients was .106, which also tested to be non-significant, indicating
that the relationship between these variables is not curvilinear. These data suggest that the relationship between social competency and intelligence is significant but linear.

The third hypothesis stated that the relationship between social competency and self-concept would be significant and linear. An analysis of variance for linear and curvilinear regressions was carried out (13). The results of this analysis are reported in Table VII.

**TABLE VII**

**ANALYSIS OF VARIANCE FOR LINEAR AND CURVILINEAR REGRESSIONS**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>D.F.</th>
<th>Variance Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear Regression</td>
<td>-2025.40</td>
<td>1</td>
<td>-2025.40</td>
</tr>
<tr>
<td>Deviation of $\bar{x}$</td>
<td>2527.35</td>
<td>13</td>
<td>194.41</td>
</tr>
<tr>
<td>from line</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between-array $\bar{x}$</td>
<td>501.97</td>
<td>14</td>
<td>35.86</td>
</tr>
<tr>
<td>Within arrays</td>
<td>7656.00</td>
<td>16</td>
<td>510.40</td>
</tr>
<tr>
<td>Residual</td>
<td>10780.40</td>
<td>28</td>
<td>385.00</td>
</tr>
<tr>
<td>Total</td>
<td>8166.97</td>
<td>29</td>
<td>281.62</td>
</tr>
</tbody>
</table>

Referring back to Table III, the Pearson product-moment correlation between these two variables was found to be equal to -.243. The calculated Eta coefficient was .248. The Eta coefficient has no sign and only the discrepancy between the
absolute values of Eta and r is important in determining curvilinearity. Therefore, the level of the correlation ratio proved to be non-significant. However, in testing for the significance of linear correlation an F-ratio of -5.261 was obtained and found to be significant at the .05 level. In testing for linearity of regression, which is the departure of the array means from a straight line, the F-ratio was found to be .38. This value is not sufficiently great to lead to rejection of an hypothesis of linearity. Therefore, these results suggest that self-concept and social competency are significantly related, and their relationship is negatively linear.

Discussion

The results of the investigation of the first hypothesis appear to be contrary to the findings of Hughes (9), in that where he found a significant curvilinear relationship between WISC I.Q.'s and self-concept scores, this study indicates a lack of significant relationship when the two variables were compared directly, although there was a mild degree of curvilinearity. These findings are also contrary to those of Gorlow, Butler, and Guthrie (7), where they found a significant relationship between intelligence and self-attitude of retarded women in the I.Q. range of 50-30. However, these results lend support to the findings of Mayer (11), as he, too, found no significant differences between the self-concept scores of his three groups.
One plausible explanation for the failure of these results to support the hypothesis could be due to the fact that the WISC is an inadequate instrument for measuring the intelligence of a retarded population at the lower levels. Baumeister states, "It is clear that the WISC was never designed to test severely retarded individuals". He comments further on the fact that the lowest full scale I.Q. in the manual is 46, and that to obtain this a scaled score of 26 must be attained. Although this is adequate for normal children, "among institutionalized retardates this 'floor' effect, aside from any questions it brings up with respect to reliability, may represent a severe limitation in measurement (1). Rabin (2) stated that this is a very serious problem with the WISC. He suggested that refinements needed to be made in the lower end of the scale before the WISC can be considered as a useful tool in the diagnosis of mental retardation. Another difficulty with the WISC, as mentioned by Ogden (14), is that the use of his extrapolated full-scale I.Q.'s leads to questionable reliability of scores. This is because only a few items contribute to the scaled scores at the extreme low end of the distribution. Seashores et al. (17) believed the retardate standardization sample on the WISC was inadequate. Another defect of the WISC is its reliance upon information received from formal education. Estes (5, 6) found that formal schooling reduced I.Q. score variability through class differences. Tests such as the WISC
may also sample only one type of intellectual functioning. Sarason states that while intelligence tests may be adequate, even excellent predictors of scholastic achievement, they are "poor indicators of non-test or non-academic intellectual activity". He further states that "Conventional tests sample a very limited number of intellectual processes, for the most part those kinds of processes which are required in scholastic achievements." He concludes that "continued use of conventional tests and test scores in practice and research is likely to be, at best, non-productive (16).

The second hypothesis, which predicted a significant and curvilinear relationship between intelligence and social competency, was partially supported by the data, which indicate that this relationship is significant but linear. The authors of the Cain-Levine Social Competency Scale reported correlations between intelligence and their scale of .22 and .25 for males and females respectively. Their findings are not consistent with this study (r=.55) or those of Congdon (3) or Hays (3). Congdon found that the correlation coefficient between the Cain-Levine scale and the Stanford-Binet was equal to .81. Thus it appears that the Cain-Levine and Stanford-Binet measure the same aspects of the retardates' intellect. Hays reported a similar coefficient of .81 with mental age scores, and found the Cain-Levine not to be correlated with chronological age as the manual reports. These recent findings, added to the fact
that correlations between the WISC and the Stanford-Binet range in the .80's (10), suggest that these tests may be measuring the same intellectual behaviors (15). This being the case, one would expect a significant positive linear relationship between the Cain-Levine and WISC I.Q. scores. This is exactly what the present study indicated.

The third hypothesis under investigation stated that the relationship between self-concept and social competency would be significant and linear. The data support this hypothesis. Even though the hypothesis as stated was substantiated, this writer feels that the rationale was not. It was believed that a child with a poor self-concept would tend to withdraw when confronted with new and unusual experiences. The child with a poor self-concept might then be hampered in the development of his social abilities. Therefore, as the self-concept decreased, so would a child's social competency. This reasoning may still have some validity, but the instruments used in this study may not have tested it. The data yield a highly significant negative linear function instead of the expected positively linear function, indicating that as the social competency scores decreased, the self-concept scores increased. In reference to the first hypothesis in the present study, it was found that the social competency scale was highly correlated with the Stanford-Binet and the WISC. This social competency scale was not the only one found to be highly
correlated with these well known measures of intelligence. The Vineland Social Maturity Scale is another well known competency measure which has been found to have correlations around .85 with the Stanford-Binet (4, 8). The Vineland Social Maturity Scale has also been correlated with the Cain-Levine Social Competency Scale and found to be highly related (.77) (3.p.234). If all these measures are highly intercorrelated, then they all must be measuring the factor known as "intelligence". It is interesting to note at this point that previous studies (7, 12) stated that as intelligence decreases, so does self-concept. In this study as well as Hughes' study, I.Q. range was extended down to 40. If the writer may equate the Cain-Levine scale as a measure of intelligence, then both Hughes and the present study found that self-concept increases as intelligence decreases in the retarded ranges. It now appears that the first hypothesis may be supported by this data because self-concept seems to decrease until a point is reached on the intellectual continuum where the self-concept again increases as intelligence continues to decrease. The preceding evidence suggests that intelligence and self-concept vary in a curvilinear fashion.
CHAPTER BIBLIOGRAPHY


12. McAfee, Ronald O. and Charles C. Cleland, "The Discrepancy Between Self-Concept and Ideal-Self as a Measure of Psychological Adjustment in Educable Mentally Retarded Males," American Journal of Mental Deficiency, 70 (July, 1965), 63-68.


CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary

The purpose of this study was to investigate the relationship between intelligence, self-concept, and social competency among the mentally retarded. The hypotheses for this study were (1) the relationship between intelligence and self-concept would be significant and curvilinear; (2) the relationship between intelligence and social competency would be significant and curvilinear; (3) the relationship between self-concept and social competency would be significant and linear.

Thirty male subjects were selected from the Denton State School and placed in one of three groups according to their full-scale WISC I.Q.'s. Each group contained ten subjects of approximately the same age. The I.Q.'s for this study ranged from 40 to 69, with a ten-point range delineating each group.

The analysis of variance disclosed that the relationship between I.Q. and self-concept was non-significant. An F-ratio between Eta and the Pearson product-moment correlation was computed, since the Eta coefficient suggested some degree of curvilinearity. The results of the F-test indicated that the relationship was non-significant. These results are contrary to previous studies, and were explained as occurring because of inadequacies in the WISC.
An analysis of variance indicated that the differences between the means of the three groups measured on social competence and intelligence was significant at the .001 level. Because of this significant finding, an Eta coefficient was calculated and found to be .596. With a Pearson $r$ equal to .55, the $F$-ratio between the two coefficients proved to be non-significant. These values indicate that social competency and intelligence are significantly related in a linear rather than a curvilinear fashion. This linear relationship may be due to the high correlation between the Cain-Levine scale and other intelligence measures. The Cain-Levine may be another measure of intelligence.

The third hypothesis was tested using analysis of variance for linear and curvilinear regressions. This analysis indicated that social competency and self-concept have a significant relationship that is negatively linear. The level of curvilinearity was non-significant. The negative relationship between these two variables was explained as being due to the high relationship between the Cain-Levine and the WISC. It seems that both the Cain-Levine and the WISC were measuring the same behaviors. Therefore, the Cain-Levine scores behaved as did the WISC I.Q.'s in Hughes study (1). This resulted in a similar linear relationship for the lower three groups. This finding lends support to the theory that intelligence and self-concept vary in a curvilinear fashion.
Conclusions

The results of this investigation suggest that intelligence and self-concept are related. The relationship appears to be a negative linear function for those I.Q.'s below 70. This finding concurs with Hughes' data and lends support to the theory that intelligence and self-concept form a curvilinear function when all levels of intelligence are included. If this theory is correct, it may explain why it is that a child of less intellectual ability can out-perform a more intelligent child. The less intelligent child cannot perceive that he is handicapped, and therefore he has a higher self-concept. He does not develop any feelings of anxiety when confronted with a new situation; therefore he will not avoid new experiences. Since he is willing to attempt more, it is logical to assume that he can learn more. It is this willingness to participate and to try new things which may lead to his out-performing the brighter child who has a poor self-concept.

An interesting finding in this study was the highly significant relationship between the WISC and the Cain-Levine scale. It seems that this competency scale and others are highly correlated with various measures of intelligence. Since the WISC has been shown to be an inadequate instrument when working with children in the trainable retardate range, perhaps a scale such as the Cain-Levine would be a better choice. This test would be a more useful instrument than the Vineland, since
it has four sub-scales which are helpful in diagnosing the specific areas in which the child has weaknesses.

A further implication of this study is the need for special programs to develop the retardate's self-concept through participation in those activities in which he would be most likely to succeed. Since a better self-concept could lead to increased motivation, resulting in each retardate's working up to his capacity, institutions should make such classes a regular part of their educational program.
CHAPTER BIBLIOGRAPHY

BIBLIOGRAPHY

Books


Heber, R., Manual on Terminology and Classification in Mental Retardation, American Association on Mental Deficiency, 1959.


Turner, A. H., Factors Other Than Intelligence That Affect Success in High School, Minneapolis, The University of Minnesota Press, 1930.


Articles


Clausen, J., "PhA Subscores in Retardates and Normals: Pattern Scatter, Correlations, and Relation to Etiology," American Journal of Mental Deficiency, 70 (September, 1965), 243-244.


McAfee, Ronald O. and Charles C. Cleland, "The Discrepancy Between Self-Concept and Ideal-Self as a Measure of Psychological Adjustment in Educable Mentally Retarded Males," American Journal of Mental Deficiency, 70 (July, 1965), 63-68.


Snyder, R. T., "Personality Adjustment, Self-Attitudes, and Anxiety Differences in Retarded Adolescents," American Journal of Mental Deficiency, 71 (July, 1966), 33-41.


Unpublished Works

Combs, D. C., "The Interrelationships Among Anxiety, Intelligence, and Academic Achievement in College Students," unpublished master's thesis, Department of Psychology, North Texas State University, Denton, Texas, 1964.
