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ABSTRACT
        Examined were relationships among various verbal and
nonverbal personality scales purporting to measure extent to which an
individual behaves as if he, or the environment, controls events.
Also investigated were developmental trends related to this
internal-external dimension of personality and its relation to
academic achievement of the educable mentally retarded (EMR).
Subjects were 215 EMR children (ages 9-15 years, IQ range 45-82), who
were administered a battery of six tests. The hypotheses that there
would be a significant relationship among the personality measures at
all age levels across settings, and that there would be a
developmental trend across the age span involved, moving from an
external to internal frame of reference as age increased, were not
sustained. It was concluded that internal and external dimensions of
personality play a minimal role in the academic achievement of EMR
students as compared to the roles played by MA and CA. (See ED 038
779, EC 003 339 for project interim report.) (Author/KW)

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PERSONALITY SCALES AND ACHIEVEMENT IN THE MENTALLY
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INFLUENCING ACADEMIC ACHIEVEMENT AT
VARIOUS CHRONOLOGICAL AGE LEVELS

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HEALTH, EDUCATION, AND WELFARE

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SUMMARY

        The present study set out to examine the relationships
among a variety of both verbal and nonverbal personality scales
which purport to measure the extent to which an individual
behaves as if he, or the environment, exercises control over
the outcome of events. The study further investigated the
developmental trends involved in this internal-external
dimension of personality and its relation to academic achieve-
ment among educable retardates.

        The subjects were 215 EMR children ranging in age from
9 to 15 years and drawn from public school, parochial school
and institutional settings. Subjects ranged in IQ from 45 to
82 and in MA 4-1 to 12-0.

        It was hypothesized that: (a) there would be a signifi-
cant relationship among the various personality measures at
all age levels across settings; and (b) that there would be a
developmental trend across the age span involved, moving from
an external to an internal frame of reference with age
increasing.

        All subjects were administered a battery of tests
consisting of (a) a modification of the Intellectual Achieve-
ment Responsibility Questionnaire, (b) The Children's Picture
Test of Internal-External Control, (c) Children's Imbedded
Figures Test, (d) Rosenzweig Children's Picture-Frustration
Study, (e) Bialer-Cromwell Children's Locus of Control Scale,
and (f) the Wide Range Achievement Test, 1965 Revision.

        The hypotheses were not sustained. The major conclusion
reached was that internal and external dimensions of personality
play a minimal role in academic achievement as compared to that
played by MA and CA among our retarded Ss.

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INTRODUCTION

In their evaluation of behavioral and social research,
the President's Panel on Mental Retardation suggested that
the use of concepts presently available for the study of
personality development in normal persons would be a fruit-
ful approach for exploring variables related to such
development in the mentally retarded. It was further
suggested that the process of systematic diagnosis of the
retarded might well be approached by information gathered
through a battery of instruments which yielded data on
hitherto relatively unexplored personality dimensions.

In recent years, the literature has reported a number
of dichotomous descriptive personality scales all of which
seem to have a basic communality with regard to the dimen-
sions of personality which they purport to measure. In
effect, all the reported instruments apparently evaluate
the extent to which the individual is self-motivated,
directed, or controlled (_internal_ frame of reference) or the
extent to which the environment exercises major influence on
his behavior (_external_ frame of reference). Thus, the
Rosenzweig Picture-Frustration Study (RP-F--Rosenzweig et al,
1948) gauges intropunitive vs. extropunitive responses to
frustrating events, while the Children's Locus of Control
Scale (CLC--Bialer, 1960, 1961), the Children's Picture Test
(CPT--Battle and Rotter, 1963), and the Intellectual Achieve-
ment Responsibility Questionnaire (IARQ--Crandall et al,
1965) were designed to measure the extent to which various
event outcomes are conceptualized as being under internal vs.
external control. In a related dimension, the Children's
Embedded Figures Test (CEFT--Karp and Konstadt, 1963) is
designed to explore the field dependence vs. field inde-
pendence construct (Witkin et al, 1954) as demonstrated in
the perceptual behavior of children.

The RP-F, CLC and CEFT have heretofore been used with
subject populations including both normal and retarded child-
ren. However, to date, the CPT and IARQ have been adminis-
tered only to normal subjects. Nevertheless, implicit in
all the findings is a developmental trend from an external
to an internal orientation with increasing age. In addition,
Lefcourt (1966) in a major review of research on internal vs.
external control of reinforcements has concluded that the
internal-external dimension predicts to different social
behaviors, learning performance, and achievement-related
activities. However, no significant efforts have been made
to correlate the various instruments delineated above with
each other in order to determine the extent to which they may

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measure the same behavior and, further, whether as a group they can supply meaningful information relevant to the educational characteristics and curriculum needs of the mentally retarded. Also, no attempt has been made to relate the developmental aspects of the internal-external orientation to academic achievement.

The objectives of the present study were: (a) to examine the response characteristics of educable mentally retarded children on the above dichotomous descriptive personality scales; (b) to study the relationships among those scales to each other and to academic achievements at various chronological age (CA) levels in retarded students; (c) to isolate, if possible, the common personality dimensions of the given scales at the various CA levels in retarded subjects; and (d) to examine the developmental trends of the given personality characteristics in educable retardates and to compare these trends with normal group data where available. As a supplement to the empirical aspects of the preceding objectives, the following general hypotheses were advanced: (a) there is a significant relationship between the various personality scales at all CA levels under consideration; and (b) there is a developmental trend across the CA range represented by the sample such that responses tend to move toward an increasingly greater internal frame of reference with increasing age.

METHOD

Subjects

The total subject population consisted of 215 Educable
Mentally Retarded (EMR) children drawn from public, parochi-
al, and institutional settings at chronological age (CA)
levels 9, 11, 13 and 15 years. For purposes of this study,
a given CA level included a period of approximately 6 months
above and below the given age level. For example, CA 9
covered the range of 8-6 to 9-5. The total sample ranged in
IQ from 45 to 82, in CA from 8-6 to 15-5, and in MA from 4-1
to 12-0.

It should be noted that data for the 7 year age group
originally projected for the study have not been included in
this report. This segment was excluded on the basis of pilot
study findings which indicated that the cognitive and verbal
requirements of the various personality scales were not with-
in the intellectual capabilities of this age group. In
addition, 7 year old EMR Ss were difficult to find in the
public and parochial schools, and they were almost nonexistent
in the institutions which cooperated in this project.

Subjects were included in the study only if they met the
following criteria: (a) IQ scores within the approximate
range of 50 to 75; (b) no severe emotional problems or
physical disabilities were noted on the school or institu-
tional records; and (c) English was the dominant language
spoken in the home or by the subject.

The public school subgroup (PS) was composed of 120
children (30 at each of the CA levels 9, 11, 13 and 15)
drawn from special classes for the educable mentally retarded
in the New York City public schools. The PS sample ranged in
IQ from 50 to 77, in CA from 8-6 to 15-5, and in MA from 4-9
to 12-0. The parochial school subgroup (PAR) consisted of
45 EMR Ss (15 at each of the CA levels 9, 11, and 13) drawn
from special classes under the jurisdiction of the Catholic
Archdiocese of New York. This subgroup does not include a
sample of 15 year old subjects because the Archdiocese does
not maintain programs for children at this age level and
because limitation on time and money made it impossible for
us to follow up those children who had moved to other facili-
ties. The PAR sample ranged in IQ from 45 to 82, in CA from
8-7 to 13-5, and in MA from 4-10 to 11-5.

The institutional subgroup (INS) was made up of 50 EMR
children drawn from various cooperating institutions in ie

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tristate New York metropolitan area. The institutional facilities involved were Willowbrook State School (N.Y.), Suffolk State School (N.Y.), Southbury Training School (Conn.), and Edward R. Johnstone Training and Research Center (N.J.). The INS subgroup was composed of 15 $\underline{S}$s at each of the CA levels 11, 13 and 15 years and of 5 $\underline{S}$s at CA 9. The limitation in the 9 year old segment was due to the relatively small number of institutionalized children at that age level who could meet the criteria for inclusion in the study. The INS sample ranged in IQ from 45 to 72, in CA from 8-7 to 15-3, and in MA from 4-1 to 9-5.

Table I summarizes the characteristics of the three major subgroups and of the total population according to MA, CA, and IQ.

Table II summarizes the population characteristics by sex, race and setting.

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Table I

Means and Standard Deviations of MA, CA, and IQ
For Different Settings (N=215)

		Setting			
Variables		PS	PAR	INS	Total
MA	$\overline{X}$	90.91	83.31	83.56	87.37
	SD	20.17	16.36	15.25	17.79
CA	$\overline{X}$	142.64	131.53	150.40	142.37
	SD	26.52	19.48	23.48	25.31
IQ	$\overline{X}$	65.19	64.67	59.00	63.64
	SD	6.79	9.49	6.44	7.80

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Table II

Population Characteristics by Sex, Race and Setting

	Setting								Total Sex
	PS		PAR		INS		Total Race		
	W	NW	W	NW	W	NW	W	NW	
Male	30	36	20	6	16	23	66	65	131
Female	22	32	14	5	7	4	43	41	84
Total	52	68	34	11	23	27	109	106	215

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Materials and Procedure

Each S was seen individually and the following instruments were administered in two separate sessions (AM and PM) in the given order. The separation in time was considered necessary in order to minimize fatigue and because of the similarity in form and content of some of the tests involved (e.g., CPT and RP-F).

First Testing Session (AM)

1. Modified Intellectual Achievement Responsibility Questionnaire (MIARQ)

    The instrument used in this study is a modified form of an original 34-item forced-choice scale developed by Crandall, Katkovsky, and Crandall in 1965. The modified version of the test consists of 24 forced-choice items.

    As in the original scale, each item stem describes either a positive or a negative achievement experience which occurs in most children's daily lives. The stem is followed by one statement which indicates that the event was caused by the child and another statement indicating that the event occurred because of the behavior of someone else in the child's immediate environment. Internal alternatives are designated by the symbol "I". Positive event items are indicated by a plus sign and negative events by a minus sign following the "I". A child's I+ score is obtained by summing all positive events for which he assumes "credit", and his I- score is the total of all negative events for which he assumes "blame". His total score is the sum of his I+ and his I- subscores.

    The MIARQ differs from the original IAR scale (see Appendix C_1) in a number of ways. As already noted, the MIARQ scale is shorter (24 items as against 34 in the original). In addition, the language level of each item and of the general instructions is simplified, and the S is given two introductory examples to be sure he understands the requirements of the task. Throughout an effort was made to modify the equivalent items in the original scale in such a manner as to maintain the essential meaning of the original items. An example follows.

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IAR Scale (original)

> Suppose you did better than usual in a
> subject at school. Would it probably
> happen
> a)   because you tried harder, or
> b)   because someone helped you

MIARQ Scale (modified)

> When you do better in school, is it
> a)   because you try hard, or
> b)   because somebody helped you

The modifications exemplified above were promulgated
on the basis of pilot administrations to mentally
retarded children who quickly demonstrated their
difficulty with the original instrument. The modi-
fied IARQ adheres to the specific design of the
original authors (Crandall et al, 1965) that the IAR
scale should differ from the Children's Locus of
Control Scale and the Children's Picture Test of
Internal-External Control in three important dimen-
sions: (a)   it purports to assess children's beliefs
in reinforcement responsibility exclusively in intel-
lectual-academic achievement situations; (b) it
limits the source of external control to those
persons who have the most intimate contact with the
child, i.e., his parents, teachers, and peers; and
(c) it was constructed to sample both positive and
negative events for which the individual could
accept responsibility.   The modified IARQ is presented
in Appendix C_2.

   With the population employed in the present
study, the MIARQ has a Cronbach Alpha reliability
coefficient of .58.

2.   Children's Picture Test of Internal-External
     Control (CPT)

   The test consists of six cartoon items, in which
the subject is asked to state "what he would say" in
various life-like situations which involve the
attribution of responsibility.   The items are scores
along a seven-point scale with three degrees of
internality, three of externality, and a nondiscrim-
inatory midpoint.   The higher the score the more
external the orientation.

In the present study CPT was administered individually employing an oral card-by-card method. The instructions and the comments on each card were read by the Examiner and S's responses were recorded verbatim. A sample of this instrument is presented in Appendix D. With the population employed in this study, the CPT has a Cronbach Alpha reliability coefficient of .24.

3. Karp-Konstadt Children's Embedded Figures Test (CEFT)

The Children's Embedded Figures Test is a variation of the Embedded Figures Test originally devised by Witkin et al (1954) and is a revision of the children's version of the Embedded Figures Test devised by Goodenough and Eagle (1963).

The CEFT (Karp and Konstadt, 1963) consists of 25 items in which the subject is required to find the location of two forms (Tent and House) embedded in complex figures. The subject is given pre-test practice with figures which are slightly embedded in complex forms to illustrate the procedure and to facilitate his understanding of the task. He then proceeds immediately into the test proper.

The test was standardized on 160 children ranging in age from 5 to 12 years (Karp and Konstadt, 1963). The subjects were randomly selected from student populations in N.Y.C. from neighborhoods of diverse ethnic, religious, and racial composition. Validity coefficients between CEFT and EFT were .83 to .86 at 11-year level.

The test measures what Witkin and his associates call field dependence and field independence. A field dependent individual is described as:
"Characterized by passivity in dealing with the environment by unfamiliarity with and fear of their own impulses, together with poor control over them; by lack of self-esteem and by possession of a relatively primitive and undifferentiated body image."

A field independent individual is described in converse terms. The CEFT reveals that there is increasing ability of the subjects to detect the embedded forms from years 5 to 12. This would indicate a developmental process moving from dependency to independency with increasing age. A sample of

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this instrument is presented in Appendix E. A
Cronbach Alpha reliability coefficient of .87 was
obtained with the present study population.

Second Testing Session (PM)

4. Rosenzweig Picture-Frustration Study (RP-F)

The Rosenzweig P-F is a limited projective
technique designed to assess reactions to situations
of stress. The children's form (Rosenzweig et al,
1948) is designed for ages 4 through 13 and consists
of an eight-page booklet of twenty-four cartoon-like
drawings, each showing a situation likely to occur
in any ordinary day. The stimulus material depicts
crudely sketched figures of males and females (both
adults and children) whose facial expressions are
deliberately omitted, but with just enough detail in
both figure and background to suggest the overall
situation. However, in each cartoon the instigator
of the frustration as well as the victim are clearly
identified.

The subject is requested to give the response
he thinks the thwarted person in the cartoon would
most likely give, on the assumption that the subject
will identify with and respond for the anonymous
figures who are being thwarted. The frustrating
agents are adults and children from both sexes,
while the frustrated person is sometimes a boy and
at another times a girl. The instructions deliber-
ately stress the game aspects of the test.

The present study employed the individual oral
card-by-card administration method discussed by
Lipman (1959) and Mirmow (1952). Examiners read
both the instructions for the test and the comments
on each card and recorded the response of the subject.
A sample plate of this scale is presented in
Appendix F.

5. Bialer-Cromwell Children's Locus of Control Scale
    (CLC)

The construct "Locus of Control" (LC) is seen as
reflecting the individual's ability to conceptualize
the relationship between his own behavior and the
outcome of events. Thus, the "Children's Locus of
Control Scale" (Bialer, 1960, 1961) was designed to
measure the extent to which a given child character-
istically construes event outcomes (both positive

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a.d negative) as being consequential to his own
actions (i.e., internally controlled) rather than
as due to the whim and/or manipulations of fate,
chance, objects, or other people (i.e., externally
controlled.

The scale consists of 23 questions verbally
administered, and so worded that for some items a
"Yes" answer, and for other items a "No" answer are
taken as indicating internal control (ILC). In the
administration of the questionnaire, S is simply
asked to say "Yes" or "No" to each item as it is
read to him; and the scale is scored in terms of the
total number of responses in the direction of internal
control. The overall score is interpreted as indi-
cating the S's relative ability to conceptualize the
outcome of events as being under his own control
(the higher the score, the more internal the orienta-
tion).

In data derived during the standardization of
the scale, an adjusted split-half reliability of .86
was obtained. In subsequent studies, Miller (1960),
utilizing 100 mentally retarded Ss, found an
adjusted split-half reliability of .87; and McConnell
(1962) obtained a test-retest reliability coefficient
of .73 with 18 retarded Ss. Gozali and Bialer
(1968) obtained test-retest reliabilities of .84 and
.87 with original and referse forms of the scale
respectively--as well as significant indications that
the scales were relatively independent of response -
set bias among a total population of 189 retardates.
The scale is presented in Appendix G. Present data
yielded a Cronbach Alpha reliability coefficient of
.38.

6. Wide Range Achievement Test (WRAT)

The instrument utilized in our study was the
1965 revision of the WRAT (Jastak et al, 1965).
For our purposes only the reading and arithmetic
subtests were employed. The spelling subtest was
omitted because it was too time consuming for the
population.

RESULTS

The statistical analyses have necessitated numerous
tabular arrangements. To facilitate the readability of the
report, tables have been verbally summarized in the following
text, and the tables themselves have been placed in Appendix
A. All statistical analyses were run on the IBM 6600
Computer, and the .05 level of probability was used to
determine statistical significance.

The results will be delineated in accordance with the
data relating to empirical objectives and to those bearing
on specific hypotheses.

Empirical Data

Response Characteristics

The means and standard deviations of the personality
measures and of reading and arithmetic scores for the
various settings at each age level are presented in
Tables III, IV, and V.

Analogous data for the total population at each age
level appear in Table VI.

Means and standard deviations of the personality
and achievement variables for the different settings
and for the total sample, combining age levels, are
given in Table VII.

The relationships among the personality scales to
each other and to reading and arithmetic scores were
examined by correlational techniques (Pearson $\underline{r}$) for
each setting separately and for the population as a
whole.

Table VIII presents the intercorrelation matrix for
the PS subgroup which consisted of 30 subjects at each
of the age levels 9, 11, 13, and 15.

Significant correlations were obtained between CEFT
and IARQ (p < .05), CEFT and RP-F(I) (p < .01), CEFT and
RP-F(M) (p < .01) and between MIARQ and RP-F(I) (p < .05)
and MIARQ and RP-F(M) (p < .01). Within the RP-F,
negative relationships (p < .01) were observed between (I)
and (E) and between (E) and (M). The correlations with
achievement also reveal interesting trends. MIARQ and

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CEFT both correlate with RGL and AGL (p < .01). AGL also
correlates with RP-F(I) and RP-F(M) (p < .01). RGL shows
a positive relationship to RP-F(I) (p < .05) and to RP-F(M)
(p < .01). Both RGL and AGL show a negative correlation
with RP-F(E) (p < .05). No other significant relation-
ships were apparent for this subgroup.

The intercorrelation matrix for the INS subgroup,
which consisted of 5 subjects at age 9 and 15 Ss at
each of the age levels 11, 13 and 15, is presented in
Table IX. Significant correlations were obtained between
MIARQ and RP-F(M) (p < .01), CEFT and RP-F(M) (p < .05),
CLC and RP-F(I) (p < .05). RP-F(E) was found to be
negatively related to RP-F(I) (p < .01) and RP-F(M) (p < .01).
It is also noted that MIARQ, CEFT, and RP-F(M) are all
correlated to AGL (p < .05). The results, however, must
be considered in the context of a limited sampling and
the fact that age 9 represents only 5 subjects.

Table X presents the intercorrelation matrix for
the PAR subgroup consisting of 15 subjects at each of
the age levels 9, 11, and 13. Significant correlations
were found between MIARQ and RP-F(I) (p < .01) and CEFT
and RP-F(I) (p < .05). RP-F(E) was found to have a
negative relationship to RP-F(I) (p < .05) and RP-F(M)
(p < .01). The PAR data also indicated that for that
sample the AGL was significantly related to MIARQ
(p < .01), CEFT (p < .05), and RP-F(I) (p < .01). These
results must also be evaluated with caution due to the
small sample size and the restricted CA range (ages 9,
11, and 13).

The intercorrelation matrix for the total population
is presented in Table XI. The total population consisted
of 50 subjects at age 9, 60 subjects at each of the age
levels 11 and 13, and 45 subjects at age 15, for a total
of 215 subjects. As Table XI shows, significant positive
relationships were found between MIARQ and CEFT (p < .01),
RP-F(I) (p < .01), RP-F(M) (p < .01); and there was a nega-
tive relationship between MIARQ and RP-F(E) (p < .01).
CEFT was found to be positively related to RP-F(I)
(p < .01) and RP-F(M) (p < .01) and negatively related to
RP-F(E) (p < .05).

The dimensions tapped by the RP-F scale were
significantly related to each other in the following
manner. RP-F(E) was negatively correlated with RP-F(I)
(p < .01) and RP-F(M) (p < .01), and RP-F(I) was positive-
ly correlated to RP-F(M) (p < .05). It should be noted
that the CPT and CLC scales showed no relationship to

each other or to any other personality measure (except
for the correlation of CLC and RP-F(I) for the INS group)
used in the study. The MIARQ, CEFT, RP-F(I), and
RP-F(M) were significantly related to RGL, and the MIARQ,
CEFT, RP-F(I), and RP-F(M) had a positive relationship
with AGL. However, RP-F(E) was negatively related to
AGL. No other significant relationships were evident
for the total population.

The intercorrelation matrices for specific age levels
of the total population are presented in Tables XII,
XIII, XIV, and XV. The data summarized in these tables
will be further reviewed in the subsequent section under
Hypothesis Testing.

The relationships between age and academic success
and failure for the various settings were examined by a
series of Chi Square analyses for reading and arithmetic
separately. For the purpose of this analysis, academic
failure was defined as performance at more than one-half
year below MA expectancy. Tables XVI and XVII present
the descriptive data concerning the pattern of success
and failure scores by age and setting for reading and
arithmetic, respectively. Table XVIII summarizes the
Chi Square analysis of the descriptive data across
settings.

Common Dimensions

Common personality dimensions of the personality
scales were examined by means of factor analysis,
utilizing data from the total population. In combining
the data from the PS, INS, and PAR groups for this
analysis, it was assumed that these subgroups represent
samples of the broad spectrum of individuals we cate-
gorize as "Mentally Retarded". The small size of the
INS and PAR samples also precluded meaningful individual
factor analysis for these particular groups. The age
and achievement variables were included in the factor
analysis because of the consistent relationships between
these variables and the personality scales found in
earlier analyses. The unrotated and rotated (Quartimax)
factor matrices for all pertinent variables are shown in
Table XIX. As indicated, two factors were derived
through Quartimax rotation. Factor A consists of MA,
CA, MIARQ, CEFT, RP-F(I), RGL, and AGL. Factor B is
comprised of a positive loading for RP-F(M) and a nega-
tive loading for RP-F(E).

The nature of the curve for the developmental trend
for each of the personality characteristics and for

academic achievement was examined graphically. The
derived curves for each of the pertinent variables are
presented for specific settings and for the total sample
in Figures A through J (Appendix B). Inspection of the
figures indicates a developmental trend from lesser to
greater internality with increasing CA.

Hypothesis Testing

H1: There is a significant relationship between the
various personality scales at all CA levels under
consideration.

Table XII indicates that for the combined 9 year
group there was a significant positive relationship
between RP-F(I) and CEFT (p < .01), and there were signi-
ficant negative correlations (p < .01) between RP-F(E)
and both RP-F(I) and RP-F(M). No other correlations
were statistically significant at this age level.

According to Table XIII, at age 11 RP-F(I) showed
significant correlation (p < .05) with RP-F(M), with CEFT,
and with MIARQ; and RP-F(M) was also significantly
related (p < .05) to MIARQ. No other coefficients were
significant for the 11 year olds.

Table XIV shows that with the 13 year old sample
MIARQ and RP-F(I) were significantly correlated
(p < .05), while again RP-F(E) showed a significant nega-
tive relationship (p .01) to both RP-F(I) and RP-F(M).

As can be seen by Table XV, among the 15 year old
Ss, RP-F(E) was significantly negatively related
(p < .05) to both CEFT and CLC, as well as to both RP-F(I)
and RP-F(M) at (p < .01). In addition, RP-F(M) was
significantly correlated with CEFT (p < .01).

H2: There is a developmental trend across the CA range
toward an increasingly internal frame of reference.

This trend was generally indicated by the graphic
representations in the several figures mentioned above
(see Appendix B). In addition, a one-way analysis of
variance technique was utilized to compare the differences
between each age group on each of the personality and
achievement trends for the various settings. Duncan's
multiple range test of significance indicated the follow-
ing for the specific subpopulations:

PS Group (CA range 9 to 15)
1. MIARQ. There was increasing internality from

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CA 9 to CA 13 (p < .05). However, there is no
significant difference between CA 13 and CA 15.

2. CEFT. There was a significant trend toward
greater internality from CA 9 to CA 15
(p < .05), with no apparent difference between
CA 9 and CA 11.

3. CPT. No significant trends were derived.

4. CLC. Significant trends (p < .05) were observed
between ages 9 and 11, 9 and 13, and 9 and 15.
Other trends were not significant.

5. RP-F(E). There was an overall significant
diminishing of the (E) response from CA 9 to
CA 15 (p < .05). However, no differences
emerged between 9 and 11 and between 11 and 13.

6. RP-F(I). There was a significant increment in
the (I) response from CA 9 to CA 13 and from
CA 9 to CA 15 (p < .05), with no difference
between CA 9 and CA 11. Significant increases
were also observed from CA 11 to 13 and 11 to
15 (p < .05), with no differences between CA 13
and 15.

7. RP-F(M). There was a significant increment
in the (M) response over the total age range
(p < .05), with no significance between CA 9
and 13.

8. RGL. There was a significant increase
(p < .05) in reading achievement between CA 9
and 11, CA 9 and 13, and CA 9 and 15. There
was, however, no difference between CA 11 and
13. Nevertheless, significant increments
were obtained between CA 11 and 15 and between
CA 13 and 15.

9. AGL. There was a continuous significant
developmental increment in arithmetic achieve-
ment from one age level to the next (p < .05).

PAR Group (CA range 9 to 13)
1. MIARQ. There is a significant trend (p < .05)
toward increasing internality from CA 9 to
CA 11 and a leveling off at that point with
no significant difference between CA 11 and
CA 13.

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2. CEFT. No significant developmental trends derived.

3. CPT. No significant trends derived.

4. CLC. No significant trends derived.

5. RP-F(E). No significant trends noted.

6. RP-F(I). No significant developmental trend.

7. RP-F(M). No significant differences obtained between age levels.

8. RGL. There was a continuous and significant increment ($p < .01$) in reading achievement between each of the successive age levels.

9. AGL. Arithmetic achievement increased significantly ($p < .01$) from CA 9 to CA 11; however, it leveled off from CA 11 to CA 13, with no significant difference between the latter age groups.

INS Group (CA range 9 to 15)

1. MIARQ. There were no apparent differences between CA 9, 11, and 13; however, there was a trend toward significantly greater ($p < .01$) internality from CA 13 to CA 15.

2. CEFT. No significant developmental trends were derived on this variable.

3. CPT. No significant trends noted.

4. CLC. No significant trends noted.

5. RP-F(E). The (E) response showed no change from CA 9 to 11 to 13; however, at that point there was a significant decrement ($p < .05$) from CA 13 to CA 15. There was also a marginally nonsignificant difference between CA 9 and CA 15. The apparent equality of the means for the RP-F(E) variable at the latter age levels can probably be accounted for as a statistical artifact generated by the relatively fewer number of Ss at CA 9 (N = 5) than at the other age levels (N = 15).

6. RP-F(I). No significant developmental trend derived.

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7. RP-F(M). There were no significant differences in the (M) response between CA 9, 11, and 13; however, that response increased significantly (p < .01) from CA 13 to CA 15.

8. RGL. No significant trends derived.

9. AGL. There were no significant differences between CA 9 and CA 11; however, arithmetic achievement increased significantly (p < .05) from CA 11 to age 13 and then leveled off with no difference between CA 13 and 15.

Since it was observed that the relatively small CA 9 sample in the INS group may have led to some-what spurious results within this setting, it was decided to reanalyze all the data for this group, eliminating the scores for those 5 Ss who were at CA 9.

The resulting reanalysis led to findings regarding developmental trend relationships among CA 11, 13, and 15 for the various measures which were completely analogous to those reported above for the same levels on the given measures. With specific reference to RP-F(E), the following results were confirmed: The (E) response showed no change from CA 11 to 13, with a significant decrement (p < .05) from CA 13 to CA 15.

In order to determine the role played by the developmental variables in the relationship between personality and achievement, partial correlations were obtained between MA and CA and each of the tests employed (N = 215). Tables XX and XXI present the zero-order and partial correlations of personality and achievement measures, with MA and CA controlled for reading and arithmetic, respectively.

As these tables indicate, when the combined effects of MA and CA are controlled, the contribution of the personality measures to academic achievement reduces to practically zero for our sample.

Due to the inequalities in representation of the various age levels among the settings utilized, a comparative analysis was made of reading and arithmetic achievement scores at ages 11 and 13 both of which were represented in all settings. For this purpose a factorial ANOVA design was employed. Tables XXII and XXIII

summarize the findings of the analysis of variance for
reading and arithmetic, respectively.

As noted in Table XXII, there was a significant
interaction ($p < .01$) between settings and age levels for
reading achievement. Examination of simple effects,
employing the Scheffe test of multiple comparisons of
means, revealed that the 13 year old PAR group excelled
their PS and INS peers in reading achievement, while
there was no difference among 11 year olds across settings.

Table XXIII reveals that there was a significant
main effect for age levels, indicating that with
increasing age arithmetic achievement increases. This
is in keeping with the results of earlier analyses.

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DISCUSSION

The present study set out to examine the relationships among a variety of both verbal and nonverbal personality scales which purport to measure the extent to which an individual behaves as if he or the environment exercises control over the outcome of events. The study further investigated the developmental trends involved in this internal-external dimension of personality and its relation to academic achievement among educable retardates.

The present study modified the original proposal in the following respects: (a) it does not contain a sample of 7 year old Ss; (b) it does not contain any 15 year old parochial school Ss; (c) there were only five Ss found in the 9 year old institutional group; and (d) it does not contain Ss from private school or special class waiting lists.

It was hypothesized that there would be a significant relationship between the various personality scales at all CA levels. The results obtained in testing this hypothesis are very difficult to interpret, due to the differential pattern of relationships at the different age levels. These patterns are shown in Tables XII through XV, and are summarized in the Results section. There is no consistency in the relationships across ages; and, therefore, the hypothesis was not sustained.

However, in examining the intercorrelations of the personality scales for the total group within specific group settings, we find the following:

1. CEFT is significantly correlated with MIARQ only in the PS group and total population.

2. CEFT is significantly correlated with RP-F(M) and RP-F(I) in the PS group and the total population, while it correlated with RP-F(M) in the INS group and RP-F(I) in the PAR group.

3. MIARQ similarly correlated with RP-F(M) and RP-F(I) in the PS group and the total population while correlating with RP-F(M) in the INS group and RP-F(I) in the PAR group.

4. There is a consistent negative correlation between RP-F(I) and RP-F(E) and between RP-F(M) and RP-F(E) in all samples, when considered by setting or the total population. However, RP-F(I) and

RP-F(M) are not significantly related to each other
in any of the samples considered.

5. CLC correlated with only one variable in any of the
   analyses--namely, RP-F(I) in the INS group.

6. CPT did not correlate with any variable in any
   sample.

The presentation of the above results indicate that there
is apparently no consistent relationship among the personality
scales from the standpoint of different settings. There is,
however, a remarkable consistency within the RP-F scale in so
far as there is a consistently negative relationship between
(E) and both the (I) and (M) dimension.

This, together with the finding that both CEFT and MIARQ
correlate either with the (M) or the (I) dimension in the
various settings, with (I) and (M) in the total population,
and negatively with the (E) dimension for the total popula-
tion, seems to lend weight to the validity of the construct of
internal-external dimensions of personality as measured by
these scales.

Consideration of the lack of relationship between CLC and
CPT seems to indicate that these variables measure different
aspects of personality than those tapped by MIARQ, CEFT and
RP-F for our samples. The lack of relationship between CLC
and CPT is counter to that found by Battle and Rotter (1963)
with a normal sample. However, in an unpublished study,
Crandall (Personal Communication, 1967) found that CLC and
CPT did not correlate for a 9th grade sample.

A number of variables seem to be instrumental in the lack
of relationship between CLC and the MIARQ in our subjects.
While both are verbal scales, the CLC questions appear to
require a more global and abstract conceptualization of control
of events than do the more concrete, educationally oriented
questions of the MIARQ. The yes-no response requirement of
CLC may also be more prone to eliciting inaccurate responses
and this may have been reflected in its relatively low
reliability among our Ss.

Another aspect of this study was to investigate the
relationships between the personality scales and academic
achievement in reading and arithmetic. The Wide Range Achieve-
ment Test was utilized because of its brevity in administration,
its broad assessment range, and its low scorable base. It
estimates reading grade level by the ability of the subject to
recognize and pronounce a written letter or word. Arithmetic

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achievement is measured by computation skills. This method of assessment of reading and arithmetic skills for a retarded group is such that it was anticipated it would provide for a meaningful distribution at each age level in each setting and for the total population. The anticipated RGL distribution did not occur except in the PAR sample. The AGL distribution, however, showed a more definite progression with age for each setting and for the total population.

In the PS sample, the mean RGL was 1.12 at CA 9, 1.93 at CA 13 and 2.96 at CA 15. For the PAR group, the mean RGL at CA 9 was 1.04, and 3.47 at CA 13. In the INS group, the mean AGL was 1.60 at CA 9, 1.86 at CA 13 and 2.28 at CA 15. For the total population, the mean RGL ranged from 1.15 at CA 9 to 2.74 at CA 15. The general findings are indicative of skewed distribution with the major proportion of cases below 3rd grade in reading. This kind of distribution had an adverse effect on the results at each CA level and probably affected the results for the entire population.

In the PS sample, the mean AGL was 1.25 at CA 9, 2.76 at CA 13 and 3.50 at CA 15. For the PAR group the mean AGL at CA 9 was 1.18 and 2.79 at CA 13. For the INS group the mean AGL was 1.62 at CA 9, 2.81 at CA 13 and 2.72 at CA 15. For the population as a whole, the mean AGL ranged from 1.27 at CA 9 to 3.24 at CA 15 in a steadily increasing progression.

It is noteworthy from Tables XXII and XXIII that there was an interaction effect between age and settings in the RGL comparisons, but only an age difference in the AGL analysis. It is evident from the data that the PAR sample had a significantly higher RGL at age 13. This may be indicative of the quality and intensity of teaching methodology in the parochial school as compared to the public and institutional settings. It may also be due to the differential background of the children being served in the various settings. For example, we might postulate that the children served in the PS and INS settings are more socially, economically, and experientially deprived than would be the case in the PAR sample. These conclusions must be tentative because the differences were not evaluated at age 15, and there were no differences at age 11. If the complete data at all age levels had been available, there may have been no difference found at age 15.

Despite the limitations of the achievement data, Table XI indicates that for the total sample, AGL shows a significant correlation with MIARQ, CEFT, and all the dimensions of RP-F, as well as with RGL. Concurrently, RGL is significantly correlated with MIARQ, CEFT, and both the (I) and (M) components of RP-F. It is indicated by these results that relationships among certain personality scales also encompass an additional relationship with achievement.

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In analyzing these relationships further, a factor analysis yielded two factors as shown on Table XIX. Factor A includes loadings of MIARQ, CEFT, RP-F(I), RGL, and AGL. This appears to represent an Internal Responsibility Factor. The other factor (B) includes a positive RP-F(M) loading and a negative RP-F(E) loading. This appears to represent a comparatively weak Externality Factor. These findings would appear to add further validity to the construct of internal-external personality dimensions and to suggest strongly that these dimensions, as measured by MIARQ, CEFT and RP-F(I), are related to academic achievement.

However, a further analysis of the data, as presented in Tables XX and XXI, cast doubt on the nature of the derived factors.

It should be noted that MA and CA loaded very heavily on the "Internal Responsibility Factor". On the one hand, the finding lends credence to the developmental nature of this factor, and on the other it raises the suspicion that the relationships delineated by this factor may be strongly based on the correlations of MA and CA with the variables involved. In order to evaluate the latter possibility, partial correlations were derived for the personality and achievement variables with MA and CA controlled. Tables XX and XXI show that when the developmental variables are partialled out of the relationship between the personality and achievement variables, the correlations between the latter become essentially zero. These findings suggest that the relationships between the personality variables and achievement may be largely artifactual, and that the internal-external dimension of personality plays a minimal role in academic achievement as compared to these develop- mental variables, at least with our subject population.

The relationship between age and academic success and failure in the various settings are presented in Tables XVI and XVII.

The data in Tables XVI and XVII were subjected to Chi Square analyses to evaluate the significance of the various relationships across settings. The result of these analyses, which are summarized in Table XVIII, indicate that there were no differences in success and failure in arithmetic across settings for the various age levels. In other words, the pattern for differential success and failure in arithmetic achievement was maintained across settings. Table XVIII also indicates that the differential patterns of success and failure in reading achievement were significant across settings only at the 13 year level. It is evident from Table XVI that at age 13, the PS group has a significantly different pattern

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of success-failure experience than do the other groups. It is noteworthy that at age 9, the PS and PAR groups show predominantly success experiences in reading by our criteria. However, while the PAR group maintains this pattern through age 13, the PS group completely reverses the success-failure pattern at CA 13 and maintains this reversal through CA 15. These findings seem to lend further credence to the afore-mentioned tentative conclusions regarding differential teaching methodologies and experiential backgrounds character-istic of the various settings.

Another hypothesis tested in this study was that there would be a developmental trend moving from an external (or lesser internal) frame of reference to greater internality. As indicated, this hypothesis was tested empirically by a trend analysis and statistically by examining the significance between the means at each age level for each personality scale in each setting. The general hypothesis was sustained only for the PS group. This is clearly evident in the graphic presentation in all cases for that sample except for the CPT (See Appendix B).

In the PAR group the pattern is markedly different. Significant developmental trends were evident only in the case of MIARQ. In the INS group there was again a different pattern. Here, MIARQ shows a developmental trend only from CA 13 to 15; and while the RP-F(I) dimension showed no signifi-cant developmental trend across the age range tested, the (E) and (M) dimensions of RP-F showed significant developmental trends from CA 13 to 15 only.

The inconsistent developmental trends across settings make it impossible to interpret the data in any meaningful manner.

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CONCLUSIONS

The present results must be viewed as highly inconclusive.
This is largely because the results are very difficult to
interpret due to various differential patterns of the relation-
ships under investigation at different age levels for the
specific settings.

The following findings summarize the inconsistencies
found.

1. The general hypothesis of a significant relationship
   between the various personality scales at all CA levels
   was not sustained. Certain consistent relationships
   obtained only between the components of the RP-F scale
   and between these components and MIARQ and CEFT for
   the population as a whole.

2. The investigation between the personalty scales and
   academic achievement showed that for the total
   population there were some significant correlations
   between the achievement and personality variables.
   Also, a factor analysis yielded factor loadings which
   seemed to relate the personality scales and achieve-
   ment variables meaningfully. However, further analysis
   in which MA and CA were partialled out of the given
   correlations vitiated the above findings. It should
   be noted that these relationships were probably
   hampered by crucial limitations of the achievement
   data, namely that reading and arithmetic skills did
   not distribute themselves adequately at each age
   level in the various settings.

3. There were marked inconsistencies between the develop-
   mental trends of the personality scales for the
   different settings making it impossible to interpret
   the findings in a meaningful manner.

The overall conclusion which must be drawn from the present
results is that with the mentally retarded subjects utilized
in this study, internal-external dimensions of personality play
a minimal role in academic achievement as compared to that
played by MA and CA. The inconsistent findings in the various
settings further suggest the possibility that differential
teaching methodologies as well as the different experiential
characteristics of the subjects may be critical in the obtained
results.

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APPENDIX A

Tables III - XXIII

Table III

Means and Standard Deviations of
Personality and Achievement Measures
by Age Level for PS Group (N=120)

Age Levels

Measures		Age 9(N=30)	Age 11(N=30)	Age 13(N=30)	Age 15(N=30)
MIARQ	$\overline{X}$	12.00	13.66	15.50	16.46
	SD	3.86	2.89	3.29	2.44
CEFT	$\overline{X}$	4.46	4.76	7.43	10.43
	SD	2.60	2.23	4.68	5.01
CPT	$\overline{X}$	15.46	14.46	14.23	14.13
	SD	4.50	4.03	3.57	3.81
CLC	$\overline{X}$	12.50	10.93	12.83	13.23
	SD	3.53	2.97	2.78	2.17
TE	$\overline{X}$	11.06	9.20	8.86	8.73
	SD	4.00	4.15	2.90	3.09
TI	$\overline{X}$	4.16	4.43	5.46	5.93
	SD	2.38	1.66	1.94	1.50
TM	$\overline{X}$	5.10	8.33	7.26	8.50
	SD	2.65	3.33	3.09	2.66
RGL	$\overline{X}$	1.12	1.81	1.93	2.96
	SD	.64	.88	1.03	1.52
AGL	$\overline{X}$	1.25	2.12	2.76	3.50
	SD	.70	.73	.98	1.01

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Table IV

Means and Standard Deviations of Personality
and Achievement Measures by Age Level for PAR Group (N=45)

Age Levels

Measures		Age 9 (N=15)	Age 11 (N=15)	Age 13 (N=15)
MIARQ	$\overline{X}$	11.13	14.53	14.33
	SD	2.56	3.85	3.81
CEFT	$\overline{X}$	6.27	6.80	7.80
	SD	4.43	5.40	5.80
CPT	$\overline{X}$	16.07	15.20	15.93
	SD	5.30	2.60	3.34
CLC	$\overline{X}$	13.40	13.40	12.93
	SD	2.47	2.77	2.25
TE	$\overline{X}$	11.67	9.40	11.13
	SD	3.09	4.34	2.90
TI	$\overline{X}$	4.07	5.00	4.67
	SD	1.58	1.81	1.80
TM	$\overline{X}$	6.07	7.73	7.07
	SD	3.15	4.74	2.99
RGL	$\overline{X}$	1.04	2.03	3.47
	SD	.52	.75	1.56
AGL	$\overline{X}$	1.18	2.13	2.79
	SD	.53	1.17	1.22

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Table V

Means and Standard Deviations of Personality and
Achievement Measures by Age Level for INS Group (N=50)

Age Levels

Measures		Age 9(N=5)	Age 11(N=15)	Age 13(N=15)	Age 15(N=15)
MIARQ	$\overline{X}$	10.40	12.80	12.93	15.93
	SD	2.97	2.31	3.39	3.24
CEFT	$\overline{X}$	5.80	6.47	9.47	9.33
	SD	2.59	3.60	5.04	4.69
CPT	$\overline{X}$	17.00	16.00	17.00	14.47
	SD	4.24	3.70	3.76	5.49
CLC	$\overline{X}$	10.00	13.20	14.00	12.87
	SD	2.92	3.08	3.21	1.81
TE	$\overline{X}$	12.60	11.53	12.07	9.00
	SD	1.52	3.60	3.28	3.02
TI	$\overline{X}$	4.40	4.53	4.80	5.27
	SD	.55	2.48	2.18	1.67
TM	$\overline{X}$	5.20	5.13	6.33	8.67
	SD	1.64	2.53	2.29	2.29
RGL	$\overline{X}$	1.60	1.96	1.86	2.28
	SD	.40	1.03	.66	1.08
AGL	$\overline{X}$	1.62	1.97	2.81	2.72
	SD	.72	1.00	1.07	.77

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Table VI

Means and Standard Deviations of Personality and Achievement Measures by Age Level for Total Population (N=215)

Age Levels

Measures		Age 9(N=50)	Age 11(N=60)	Age 13(N=60)	Age 15(N=45)
MIARQ	$\overline{X}$	11.58	13.67	14.77	16.29
	SD	3.12	3.07	3.58	2.71
CEFT	$\overline{X}$	5.14	5.70	8.03	10.07
	SD	3.29	3.66	5.09	4.89
CPT	$\overline{X}$	15.80	15.03	15.35	14.24
	SD	4.66	3.68	3.73	4.37
CLC	$\overline{X}$	12.52	12.12	13.15	13.11
	SD	3.28	3.16	2.80	2.05
TE	$\overline{X}$	11.40	9.83	10.23	8.82
	SD	3.57	4.16	3.30	3.04
TI	$\overline{X}$	4.16	4.60	5.10	5.71
	SD	2.03	1.92	1.99	1.58
TM	$\overline{X}$	5.40	7.38	6.98	8.56
	SD	2.72	3.78	2.90	2.53
RGL	$\overline{X}$	1.15	1.90	2.30	2.74
	SD	.60	.89	1.30	1.42
AGL	$\overline{X}$	1.27	2.09	2.78	3.24
	SD	.66	.91	1.06	1.00

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Table VII

Means and Standard Deviations of Personality and
Achievement Measures by Setting and Total Population

Settings

Measures		PS (N=120)	PAR (N=45)	INS (N=50)	Total (N=215)
MIARQ	X̄	14.41	13.33	13.54	13.98
	SD	3.48	3.73	3.37	3.53
CEFT	X̄	6.78	6.96	8.16	7.14
	SD	4.53	5.16	4.45	4.67
CPT	X̄	14.58	15.73	15.94	15.14
	SD	4.03	3.85	4.33	4.11
CLC	X̄	12.38	13.24	13.02	12.71
	SD	3.04	2.46	2.89	2.91
TE	X̄	9.47	10.73	11.04	10.10
	SD	3.70	3.56	3.36	3.66
TI	X̄	5.00	4.58	4.82	4.87
	SD	2.04	1.74	1.99	1.97
TM	X̄	7.30	6.96	6.56	7.06
	SD	3.25	3.69	2.66	3.23
RGL	X̄	1.94	2.18	1.99	2.01
	SD	1.26	1.44	.89	1.23
AGL	X̄	2.41	2.03	2.41	2.33
	SD	1.20	1.20	1.00	1.17

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Table VIII

Relationships Among Age, Personality and
Achievement Measures for PS Group

(N=120)

Variables	CA	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.73**	.40**	.52**	-.14	.04	-.17	.31**	.32**	.40**	.64**
CA		.50**	.48**	-.15	.14	-.22*	.33**	.29**	.52**	.67**
MIARQ			.23*	-.03	.06	-.17	.22*	.25**	.26**	.37**
CEFT				-.01	.10	-.21*	.32**	.33**	.31**	.46**
CPT					-.09	-.10	-.07	.09	-.14	-.15
CLC						-.03	-.04	.02	.09	.17
RP-F(E)							-.41**	-.65**	-.18*	-.21*
RP-F(I)								.18	.20*	.39**
RP-F(M)									.25**	.33**
RGL										.61**

* Significant beyond .05 level

** Significant beyond .01 level

Table IX

Relationships Among Age, Personality and
Achievement Measures for INS Group

(N=50)

Variables	CA	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.73**	.52**	.30*	-.16	.02	-.19	.17	.48**	.15	.41**
CA		.45**	.31*	-.17	.21	-.32*	.18	.50**	.23	.42**
MIARQ			.28	-.21	.14	-.19	.14	.39**	.12	.30*
CEFT				.01	.03	-.07	.18	.32*	-.04	.39**
CPT					.01	.08	-.04	-.02	-.20	-.07
CLC						-.24	.36*	-.04	.01	.10
RP-F(E)							-.61**	-.56**	-.10	-.12
RP-F(I)								.27	.10	.27
RP-F(M)									.29	.40**
RGL										.56**

* Significant beyond .05 level

** Significant beyond .01 level

39

Table X

Relationships Among Age, Personality and
Achievement Measures for PAR Group

(N=45)

Variables	CA	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.49**	.45**	.50**	.03	-.01	-.19	.32*	.26	.70**	.74**
CA		.36*	.15	-.02	-.05	-.07	.13	.12	.72**	.55**
MIARQ			.25	-.19	-.12	-.21	.45**	.18	.33*	.58**
CEFT				-.09	-.12	-.24	.33*	.21	.25	.37*
CPT					.14	-.24	-.08	.10	.06	-.09
CLC						-.02	-.11	.05	.02	.05
RP-F(E)							-.35*	-.77**	-.05	-.10
RP-F(I)								-.01	.17	.39*
RP-F(M)									.09	.16
RGL										.71**

*   Significant beyond .05 level

**   Significant beyond .01 level

Table XI

Relationships Among Age, Personality, and
Achievement Measures for Total Sample

(N=215)

Variables	CA	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.72**	.46**	.45**	-.15*	.01	-.20**	.29**	.33**	.43**	.63**
CA		.45**	.39**	-.12	.11	-.21**	.28**	.29**	.46**	.61**
MIARQ			.23**	-.12	.02	-.20**	.25**	.2⁶**	.24**	.41**
CEFT				-.01	.05	-.16*	.28**	.28**	.23**	.42**
CPT					-.01	-.05	-.08	.05	-.10	-.12
CLC						-.05	.03	.01	.07	.12
RP-F(E)							-.44**	-.66**	-.12	-.18**
RP-F(I)								.16*	.16*	.37**
RP-F(M)									.21**	.30**
RGL										.61**

* Significant beyond .05 level

** Significant beyond .01 level

41

Table XII

Relationships Among Age, IQ, Personality and
Achievement Measures: Total Age 9

(N=50)

Variables	CA	IQ	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.22	.97**	.11	.36*	-.24	-.08	.04	.26	.14	.21	.37**
CA		.00	.22	.05	-.17	-.02	-.16	-.02	.05	.20	.00
IQ			.06	.36*	-.21	-.07	.07	.28*	.13	.17	.39**
MIARQ				-.08	-.12	.03	-.18	-.06	.19	.03	-.04
CEFT					.00	-.16	-.14	.43**	.26	.14	.25
CPT						.02	-.23	-.03	.26	-.21	-.09
CLC							.00	-.27	-.02	-.21	-.09
RP-F(E)								-.39**	-.43**	-.04	.03
RP-F(I)									.13	.07	.25
RP-F(M)										.20	.34*
RGL											.54**

* Significant beyond .05 level

** Significant beyond .01 level

Table XIII

Relationships Among Age, IQ, Personality and
Achievement Measures: Total Age 11

(N=60)

Variables	CA	IQ	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.20	.99**	.35**	.25	-.12	-.01	-.11	.31*	.36**	.12	.48**
CA		.05	.02	-.01	-.27*	.06	.04	-.08	-.11	.00	.25
IQ			.34**	.26*	-.08	-.02	-.14	.33**	.39**	.12	.46**
MIARQ				.16	.01	.03	-.10	.30*	.27*	.19	.44**
CEFT					-.09	.25	.01	.28*	.21	.41**	.42**
CPT						-.04	-.05	-.03	-.04	-.05	-.22
CLC							.05	.03	-.10	.18	.26*
RP-F(E)								-.34**	-.71**	.01	-.06
RP-F(I)									.26*	.03	.28*
RP-F(M)										.19	.30*
RGL											.58**

* Significant beyond .05 level

** Significant beyond .01 level

43

44

Table XIV

Relationships Among Age, IQ, Personality and
Achievement Measures: Total Age 13

(N=60)

Variables	CA	IQ	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.06	.99**	.22	.28*	-.07	-.21	-.09	-.04	.07	.34**	.44**
CA		-.04	-.02	.12	.04	-.12	-.12	.05	.06	.00	-.01
IQ			.21	.27*	-.07	-.20	-.08	-.06	.07	.33*	.44**
MIARQ				.17	-.18	.00	-.20	.30*	.05	.00	.21
CEFT					.07	-.21	.00	.07	.06	.05	.29*
CPT						.09	.00	-.22	.19	.21	-.14
CLC							-.08	.16	.03	.02	-.08
RP-F(E)								-.46**	-.60**	-.06	-.21
RP-F(I)									-.15	.06	.36**
RP-F(M)										.04	.06
RGL											.41**

* Significant beyond .05 level

** Significant beyond .01 level

44

Table XV

Relationships Among Age, IQ, Personality and
Achievement Measures: Total Age 15

(N=45)

Variables	CA	IQ	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.32	.89**	.14	.23	-.04	-.03	-.05	.16	.11	.00	.13
CA		.04	-.04	-.09	-.05	.03	-.18	.19	.11	.30*	.04
IQ			.08	.16	-.10	.02	.07	.08	.00	-.02	.15
MIARQ				-.08	.01	-.27	.09	-.11	.01	.01	.01
CEFT					.14	.20	-.37*	.10	.46**	-.12	.08
CPT						-.12	-.05	.13	.02	-.24	.12
CLC							-.31*	.19	.19	.03	.17
RP-F(E)								-.54**	-.81**	-.03	.02
RP-F(I)									.05	.04	.12
RP-F(M)										-.02	-.05
RGL											.46**

* Significant beyond .05 level

** Significant beyond .01 level

45

Table XVI

Reading Success and Failure by Age and Setting

| Age | Success/Failure | Setting | | |
		PS	PAR	INS
9	S	23	111	
	F	7	4	
11	S	16	9	12
	F	14	6	3
13	S	8	13	10
	F	22	2	5
15	S	7		6
	F	23		9

Table XVII

Arithmetic Success and Failure by Age and Setting

Age	Success / Failure		Setting		
			FS	PAR	INS
9	S		26	12	
	F		4	3	
11	S		24	11	13
	F		6	4	2
13	S		19	10	14
	F		11	5	1
15	S		9		9
	F		21		6

47

Table XVIII

Chi Square Values for Academic Success and Failure
At Each Age Level Across Settings

Age	Reading	Arithmetic
9	.06	.34
11	3.03	.83
13	16.22**	4.68
15	1.35	3.75

*p $<$ .05
**p $<$ .01

48

49

Table XIX

Unrotated and Rotated Quartimax Factor Matrices

(N=215)

Variables	Unrotated Matrix		A Rotated Matrix	B
MA	.79	.20	.81*	.06
CA	.77	.21	.79*	.04
MIARQ	.53	.05	.51*	.12
CEFT	.51	.02	.49*	.14
CPT	-.13	-.17	-.17	.12
CLC	.09	.03	.09	.00
RP-F(E)	-.45	.68	-.22	-.79*
RP-F(I)	.47	-.19	.38*	.33
RP-F(M)	.52	-.53	.33	.67*
RGL	.56	.22	.60*	-.03
AGL	.78	.23	.81*	.03

*Loadings > .35 considered significant

49

Table XX

Zero-order and Partial Correlations of Personality
and Reading Achievement--MA and CA Controlled

Measure	Zero-order r	Partial r
MIARQ	.245	.013
CEFT	.231	.021
CPT	-.095	-.029
CLC	.066	.037
RP-F(E)	-.123	-.017
RP-F(I)	.165	.022
RP-F(M)	.208	.060

Table XXI

Zero-order and Partial Correlations of Personality
and Arithmetic Achievement--MA and CA Controlled

Measure	Zero-order $\underline{r}$	Partial $\underline{r}$
MIARQ	.405	.120
CEFT	.419	.172
CPT	-.125	-.034
CLC	.115	.106
RP-F(E)	-.178	-.040
RP-F(I)	.370	.232
RP-F(M)	.297	.102

51

Table XXII

Summary of Analysis of Variance: Reading

Source	ss	d.f.	ms	F
Settings (A)	16.83	2	8.42	8.10*
Age Levels (B)	4.80	1	4.80	4.62*
A x B	11.21	2	5.60	5.38**
error	118.58	114	1.04	

* $p < .05$
** $p < .01$

Table XXIII

Summary of Analysis of Variance: Arithmetic

Source	ss	d.f.	ms	F
Settings (A)	.08	2	.04	< 1.00
Age Levels (B)	14.35	1	14.35	14.21**
A x B	.22	2	.11	<1.00
error	114.90	114		

** p<.01

APPENDIX B

Figures 1 - 9

Figure 1

MIARQ Developmental Trend At Each CA Level
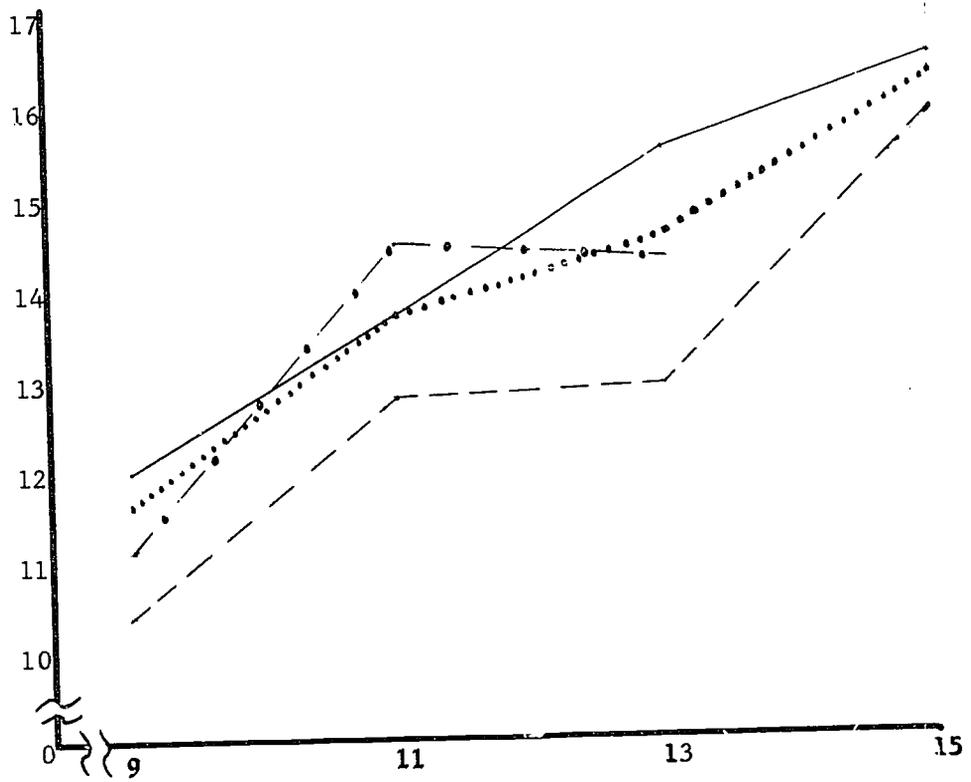
For The Various Settings

Figure 2

CEFT Developmental Trend at Each CA Level

For The Various Settings

- — — — — —Institution
- — • — • — • Parochial
- —————————Public
- • • • • • • • •Total
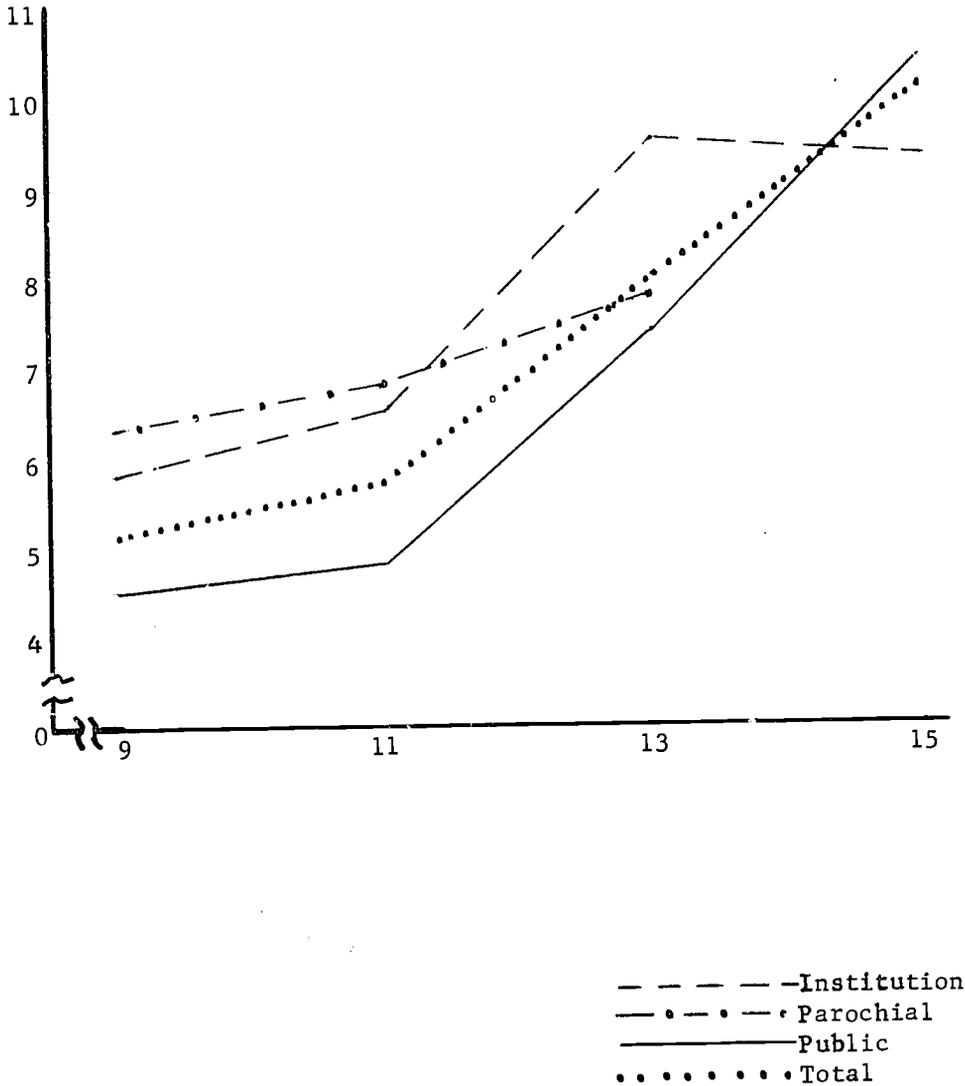
Figure 3

CPT Developmental Trend at Each CA Level

For the Various Settings
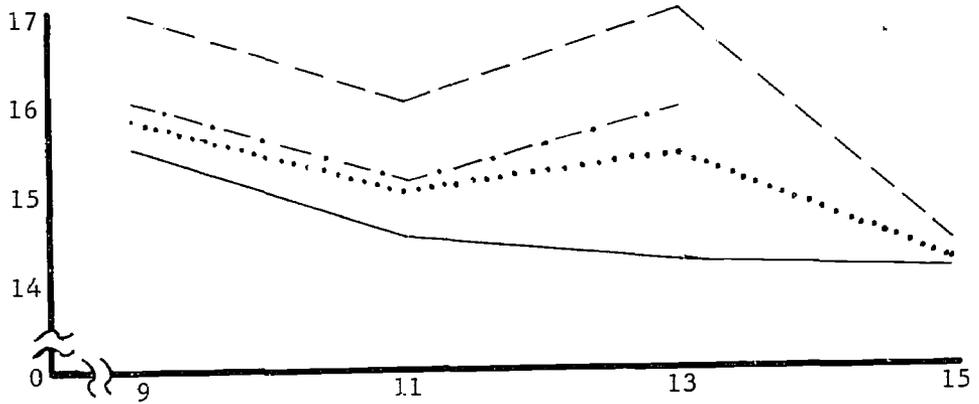

```
                                                        — — — — -Institution
                                                        —.—.—.-Parochial
                                                        ————————Public
                                                        • • • • • • • • Total
```

Figure 4

CLC Developmental Trend at Each CA Level

For the Various Settings


```
14 ┤
   │
13 ┤
   │
12 ┤
   │
11 ┤
   │
10 ┤
   │
 0 ┼╲┬──────────┬──────────┬──────────┬
     9          11         13         15
```
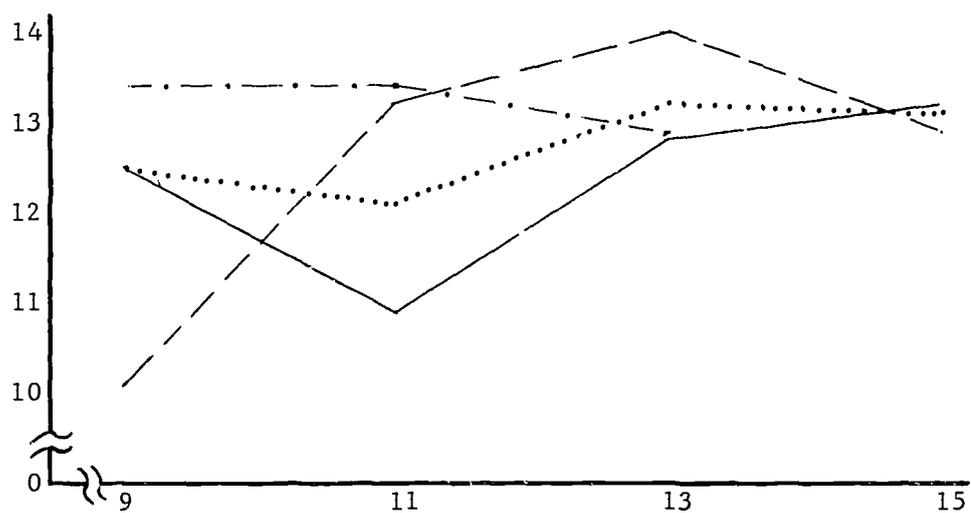
— — — — —Institution
—·—·—·—· Parochial
——————Public
· · · · · ··Total

Figure 5

RP-F(E) Developmental Trend at Each CA Level

For the Various Settings
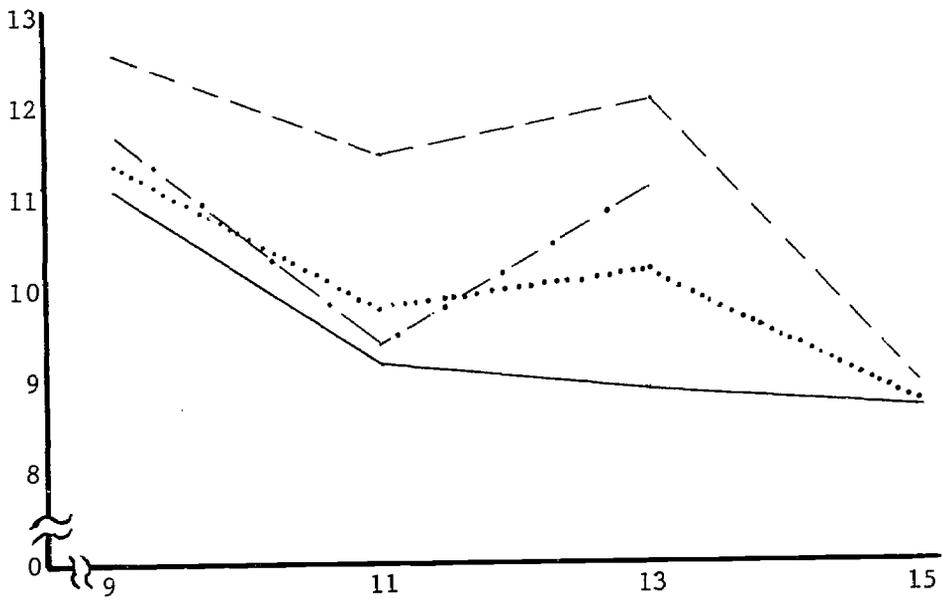
_ _ _ _ _ _Institution
_._._._ _ •Parochial
_____Public
• • • • • • • •Total

Figure 6

RP-F(I) Developmental Trend at Each CA Level
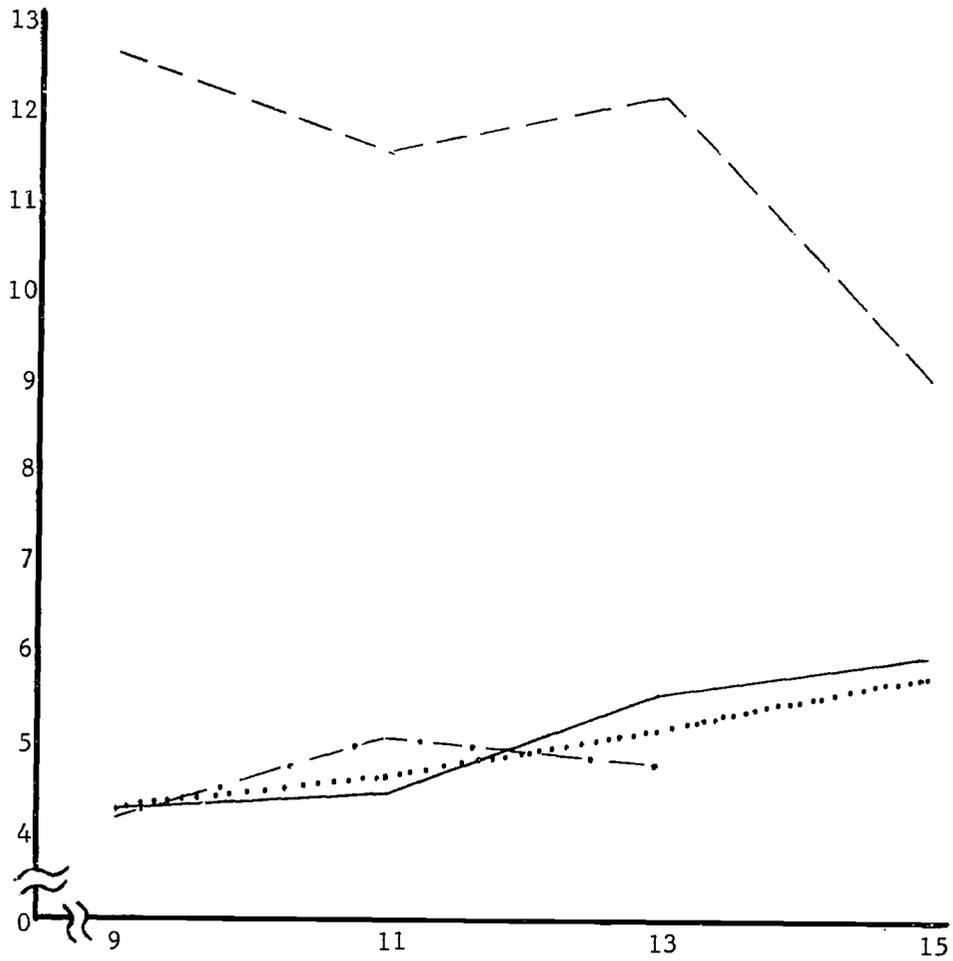
For the Various Settings

Figure 7

RP-F(M) Developmental Trend at Each CA Level

For the Various Settings
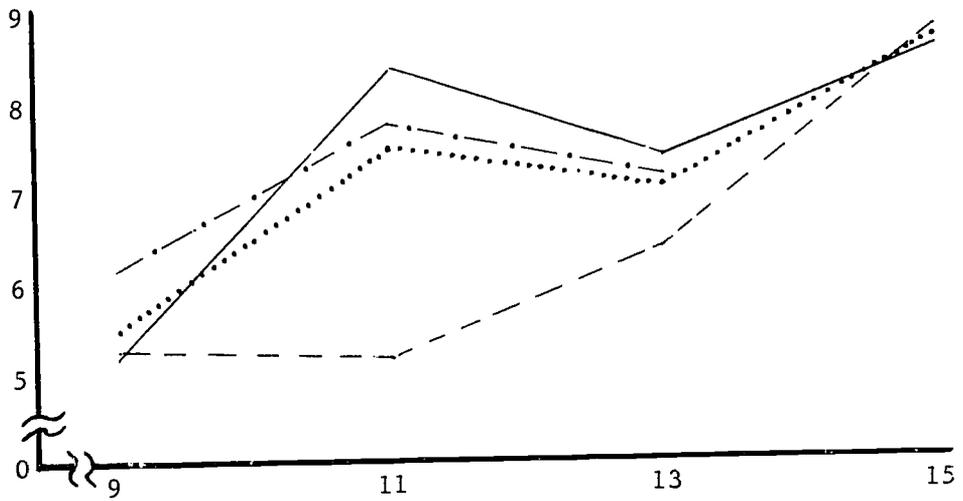

```
         Institution
         Parochial
         Public
         Total
```

Figure 8

RGL Developmental Trend at Each CA Level

For the Various Settings
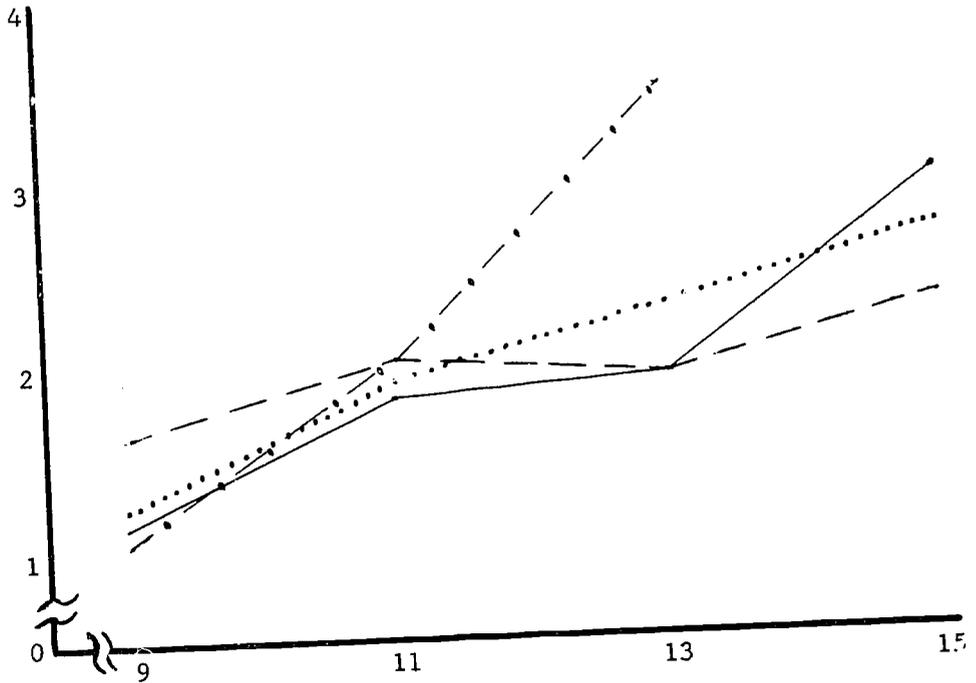
- — — — — —Institution
- —·—·—·—·—Parochial
- ——————Public
- ·······Total

Figure 9

AGL Developmental Trend at Each CA Level

For the Various Settings

- — — — Institution
- — ． — ． — ·Parochial
- ————————Public
- ． ． ． ． ． ． Total
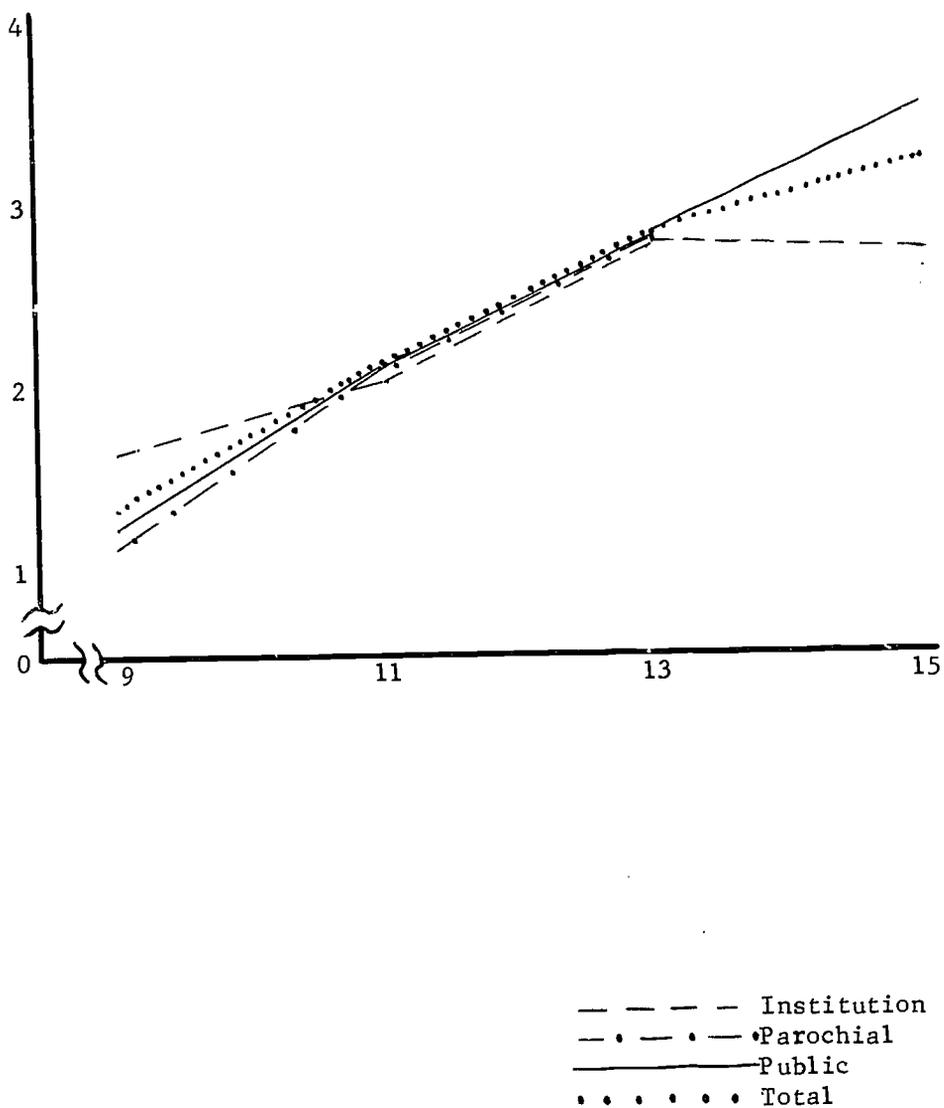
Appendix C_1

The IAR Scale

1.   If a teacher passes you to the next grade, would it
        probably be
        _____a. because she liked you, or
I +_____b. because of the work you did?

2.   When you do well on a test at school, is it more likely
        to be
I +_____a. because you studied for it, or
        _____b. because the test was especially easy?

3.   When you have trouble understanding something in school,
        is it usually
        _____a. because the teacher didn't explain it clearly, or
I -_____b. because you didn't listen carefully?

4.   When you read a story and can't remember much of it,
        is it usually
        _____a. because the story wasn't well written, or
I -_____b. because you weren't interested in the story?

5.   Suppose your parents say you are doing well in school.
        Is this likely to happen
I +_____a. because your school work is good, or
        _____b. because they are in a good mood?

6.   Suppose you did better than usual in a subject at school.
        Would it probably happen
I +_____a. because you tried harder, or
        _____b. because someone helped you?

7.   When you lose at a game of cards or checkers, does it
        usually happen
        _____a. because the other player is good at the game, or
I -_____b. because you don't play well?

8.   Suppose a person doesn't think you are very bright or
        clever.
I -_____a. can you make him change his mind if you try to, or
        _____b. are there some people who will think you're not very
        bright no matter what you do?

9.   If you solve a puzzle quickly, is it
        _____a. because it wasn't a very hard puzzle, or
I +_____b. because you worked on it carefully?

The IAR Scale

10.   If a boy or girl tells you that you are dumb, is it
         more likely that they say that
         _____a. because they are mad at you, or
I -_____b. because what you did really wasn't very bright?

11.   Suppose you study to become a teacher, scientist, or
         doctor and you fail. Do you think this would happen
I -_____a. because you didn't work hard enough, or
         _____b. because you needed some help, and other people
                 didn't give it to you?

12.   When you learn something quickly in school, is it usually
I +_____a. because you paid close attention, or
         _____b. because the teacher explained it clearly?

13.   If a teacher says to you, "Your work is fine," is it
         _____a. something teachers usually say to encourage pupils, or
I +_____b. because you did a good job?

14.   When you find it hard to work arithmetic or math prob-
         lems at school, is it
I -_____a. because you didn't study well enough before you
                 tried them, or
         _____b. because the teacher gave problems that were too hard?

15.   When you forget something you heard in class, is it
         _____a. because the teacher didn't explain it very well, or
I -_____b. because you didn't try very hard to remember?

16.   Suppose you weren't sure about the answer to a ques-
         tion your teacher asked you, but your answer turned
         out to be right. Is it likely to happen
         _____a. because she wasn't as particular as usual, or
I +_____b. because you gave the best answer you could think of?

17.   When you read a story and remember most of it, is it
         usually
I +_____a. because you were interested in the story, or
         _____b. because the story was well written?

18.   If your parents tell you you're acting silly and not
         thinking clearly, is it more likely to be
I -_____a. because of something you did, or
         _____b. because they happen to be feeling cranky?

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The IAR Scale

19.   When you don't do well on a test at school, is it
____a. because the test was especially hard, or
I -____b. because you didn't study for it?

20.   When you win at a game of cards or checkers, does it
        happen
I +____a. because you play real well, or
____b. because the other person doesn't play well?

21.   If people think you're bright or clever, is it
____a. because they happen to like you, or
I +____b. because you usually act that way?

22.   If a teacher didn't pass you to the next grade, would
        it probably be
____a. because she "had it in for you," or
I -____b. because your school work wasn't good enough?

23.   Suppose you don't do as well as usual in a subject at
        school. Would this probably happen
I -____a. because you weren't as careful as usual, or
____b. because somebody bothered you and kept you from
        working?

24.   If a boy or girl tells you that you are bright, is it
        usually
I +____a. because you thought up a good idea, or
____b. because they like you?

25.   Suppose you became a famous teacher, scientist or
        doctor. Do you think this would happen
____a. because other people helped you when you needed it, or
I +____b. because you worked very hard?

26.   Suppose your parents say you aren't doing well in your
        school work. Is this likely to happen more
I -____a. because your work isn't very good, or
____b. because they are feeling cranky?

27.   Suppose you are showing a friend how to play a game
        and he has trouble with it. Would that happen
____a. because he wasn't able to understand how to play, or
I -____b. because you couldn't explain it well?

28.   When you find it easy to work arithmetic or math prob-
        lems at school, is it usually
____a. because the teacher gave you especially easy problems, or
I +____b. because you studied your book well before you tried them?

The IAR Scale

29.   When you remember something you heard in class, is it
        usually
I +_____a. because you tried hard to remember, or
   _____b. because the teacher explained it well?

30.   If you can't work a puzzle, is it more likely to happen
I -_____a. because you are not especially good at working
           puzzles, or
   _____b. because the instructions weren't written clearly
           enough?

31.   If your parents tell you that you are bright or clever,
        is it more likely
   _____a. because they are feeling good, or
I +_____b. because of something you did?

32.   Suppose you are explaining how to play a game to a
        friend and he learns quickly. Would that happen more often
I +_____a. because you ex·lained it well, or
   _____b. because he was able to understand it?

33.   Suppose you're not sure about the answer to a question
        your teacher asks you and the answer you give turns
        out to be wrong. Is it likely to happen
   _____a. because she was more particular than usual, or
I -_____b. because you answered too quickly?

34.   If a teacher says to you, "Try to do better," would it be
   _____a. because this is something she might say to get
           pupils to try harder, or
I -_____b. because your work wasn't as good as usual?

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MIARQ

Instructions:
This is not a test. I am trying to find out how kids your
age think about certain things. I am going to ask you
some questions and you pick the answer that best describes
what happens to you or how you feel. If you want me to
repeat a question, ask me. Do you understand? All right,
listen carefully and answer.

Examples:
1. Which do like best
   a) apples or
   b) oranges

2. If you had a nickle what would you buy
   a) chocolate bar or
   b) lolypop

MIARQ SCALE

1. When you pass a test, is it
   +a) because you studied, or
   b) because it was easy

2. When you find it hard to understand school work, is it
   a) because the teacher did not explain it enough, or
   -b) because you did not listen carefully

3. If you can't remember a story, is it
   a) because the story wasn't good, or
   -b) because you just weren't interested

4. If your parents tell you your school work is good, is it
   +a) because your work is really good, or
   b) because they feel good

5. When you do better in school, is it
   +a) because you try hard, or
   b) because somebody helped you

6. If another child says you are dumb, is it
   a) because they are mad at you, or
   -b) because you did something dumb

7. If you lose a game that you are playing with another
   child, is it
   a) because he is very good at it, or
   -b) because you don't play well

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8. If you do a puzzle quickly, is it
   a) because it wasn't very hard, or
   +b) because you worked on it carefully

9. When you learn quickly, is it
   +a) because you listen carefully, or
   b) because the teacher explains it well

10. If your teacher says, "Your work is fine," is it
    a) because she says that to all the children, or
    +b) because you did a good job

11. If you find arithmetic very hard to do, is it
    -a) because you didn't study enough, or
    b) because the teacher gives hard problems

12. When you forget something the teacher said, is it
    a) because she didn't explain it well, or
    -b) because you didn't try to remember it

13. If you remember a story, is it
    +a) because you were interested, or
    b) because the story was good

14. If your parents say you are acting silly, is it
    -a) because of something you did, or
    b) because they feel mean

15. When you don't pass a test, is it
    a) because the test was too hard, or
    -b) because you didn't study

16. If you win a game that you are playing with another
    child, is it
    +a) because you play well, or
    b) because he isn't very good at it

17. When you do poorly in school, is it
    -a) because you weren't careful, or
    b) because somebody kept you from working

18. If another child says you are smart, is it
    +a) because you are really smart, or
    b) because they like you

19. If your parents tell you your school work isn't good,
    is it
    -a) because your work isn't good, or
    b) because they feel bad

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20. If you find arithmetic easy to do, is it
    a) because the teacher gives easy problems, or
    +b) because you study hard

21. When you remember something the teacher said, is it
    +a) because you tried hard to remember
    b) because the teacher explained it well

22. If you can't do a puzzle, is it
    -a) because you aren't good at puzzles, or
    b) because the instructions weren't good

23. If your parents say you are smart, is it
    a) because they are feeling good, or
    +b) because you did something smart

24. If your teacher says "your work isn't good," is it
    a) because she says this to everybody, or
   -b) because your work really wasn't good

Check items

1. When you pass a test, is it
   b) because it was easy, or
   +a) because you studied

2. When you find it hard to understand school work, is it
   -b) because you didn't listen carefully, or
   a) because the teacher didn't explain it enough

Appendix D

### Children's Picture Test

A
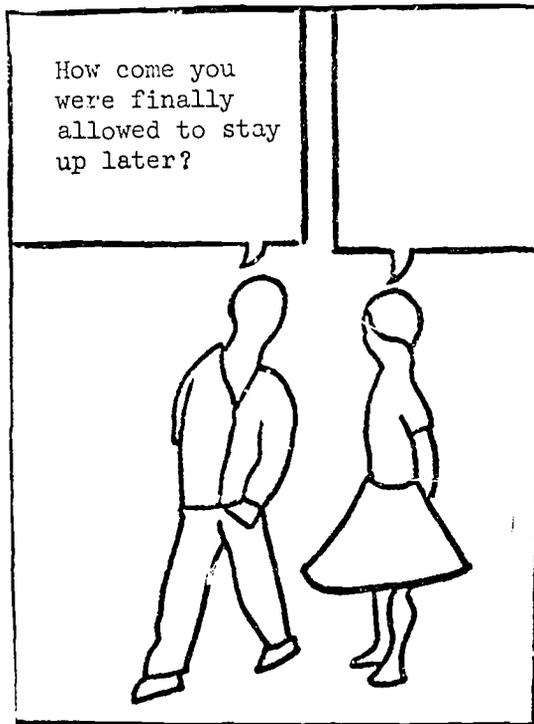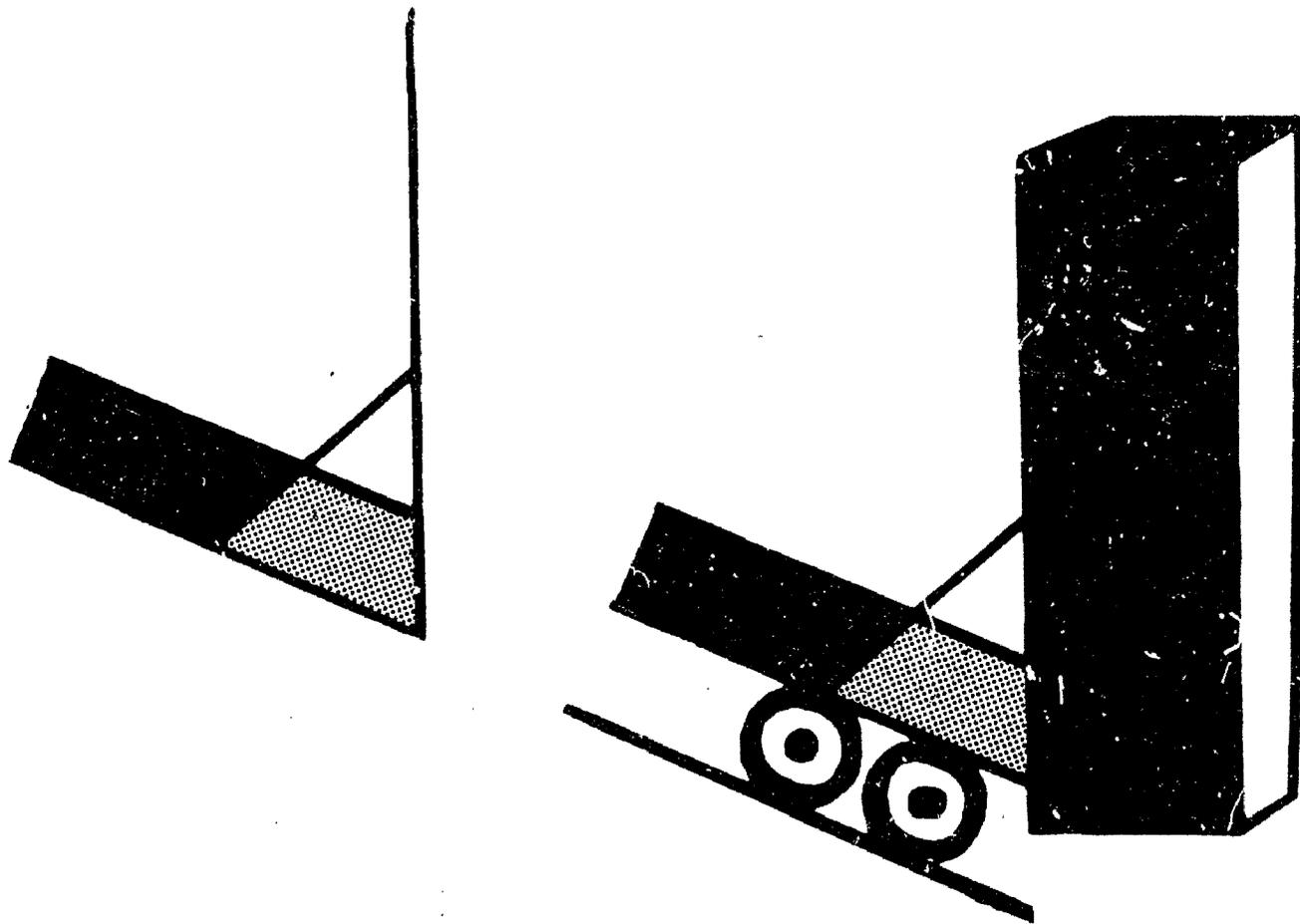
72

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Appendix F

Rosenzweig Picture-Frustration Test
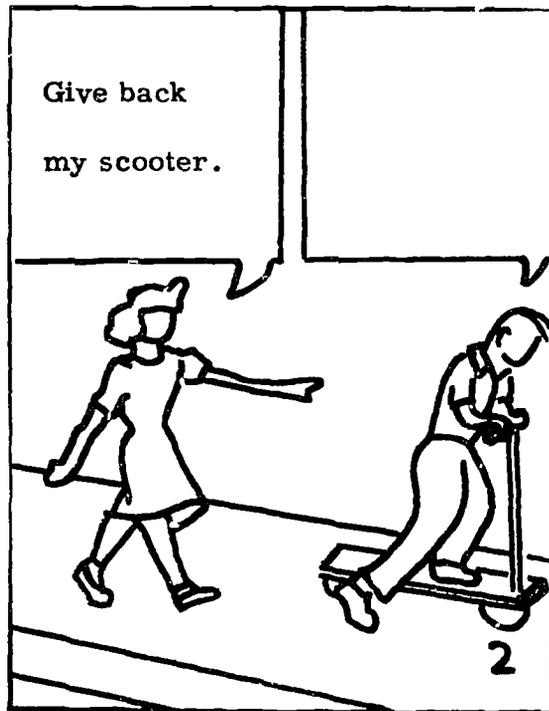
Appendix G

Children's Locus of Control Scale

(Bialer - Cromwell)

Children's Locus of Control Scale

Instructions

   This is not a test. I am just trying to find out how
kids your age think about certain things. I am going to
ask you some questions to see how you feel about these things.
There are no right or wrong answers to these questions.
Some kids say "Yes" and some say "No." When I ask the ques-
tion, if you think your answer should be yes, or mostly yes,
say "Yes." If you think the answer should be no, or mostly
no, say "No." Remember, different children give different
answers, and there is no right or wrong answer. Just say
"Yes" or "No," depending on how you think the question
should be answered. If you want me to repeat a question.
ask me. Do you understand? All right, listen carefully,
and answer "Yes" or "No."

1p. When somebody gets mad at you, do you usually feel
     there is nothing you can do about it?

2f. Do you really believe a kid can be whatever he wants
     to be?

3f. When people are mean to you, could it be because you
     did something to make them be mean?

4f. Do you usually make up your mind about something with-
     out asking someone first?

5f. Can you do anything about what is going to happen tomorrow?

6f. When people are good to you, is it usually because you
     did something to make them be good?

7f. Can you ever make other people do things you want them
     to do?

8f. Do you ever think that kids your age can change things
     that are happening in the world?

9f. If another child was going to hit you, could you do
     anything about it?

Children's LC Scale

10f. Can a child your age ever have his own way?

11p. Is it hard for you to know why some people do certain things?

12f. When someone is nice to you, is it because you did the right things?

13f. Can you ever try to be friends with another kid even if he doesn't want to?

14f. Does it ever help any to think about what you will be when you grow up?

15f. When someone gets mad at you, can you usually do something to make him your friend again?

16f. Can kids your age ever have anything to say about where they are going to live?

17f. When you get in an argument, is it sometimes your fault?

18p. When nice things happen to you, is it only good luck?

19p. Do you often feel you get punished when you don't deserve it?

20f. Will people usually do things for you if you ask them?

21f. Do you believe a kid can usually be whatever he wants to be when he grows up?

22p. When bad things happen to you, is it usually someone else's fault?

23f. Can you ever know for sure why some people do certain things?

Note: The letter "f" following item number indicates that an answer of "Yes" is scored as internal control. The letter "p" signifies that an answer of "No" is scored as internal control.

Reverse items

a) 2p. Is it impossible for a person to be whatever he wants to be?

b) 3p. Are people mean to you even if you do not do anything to make them be mean?