1 OF 2

ED

038779

DOCUMENT RESUME

ED 038 779 40 EC 003 339

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TITLE The Relationship among Various Dichotomous Descriptive Personality Scales and Achievement in the Mentally Retarded: A Study of the Relevant Factors Influencing Academic Achievement at Various Chronological Age Levels. Interim Report.
INSTITUTION New York Univ., N.Y. School of Education.
SPONS AGENCY Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO BR-6-2685
PUB DATE Jun 68
GRANT OEG-0-8-062685-172(032)
NOTE 68p.

EDRS PRICE EDRS Price MF-$0.50 HC-$3.50
DESCRIPTORS *Academic Achievement, Age Differences, Educable Mentally Handicapped, *Exceptional Child Research, *Individual Characteristics, *Mentally Handicapped, *Personality Development, Personality Tests, Projective Tests, Psychological Evaluation, Reading, Self Concept

ABSTRACT

Five descriptive personality scales evaluating the individual's internal-external orientation were administered to 120 educable mentally handicapped children, 30 each at chronological age levels 9, 11, 13, and 15. Reading and arithmetic achievement tests were also given. Results indicated a significant relationship between three of the personality scales and achievement. In addition, the results demonstrated a significant relationship between the various scales at all age levels under consideration. A developmental trend across the age range was represented with responses tending to move toward an increasingly greater internal frame of reference with increasing age. Almost three-fourths of the document consists of statistical tables and charts as well as copies of the instruments used. (Author/JD)

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The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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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 persently available for the study of personality development in normal persons would be a fruitful 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 dimensions 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 (Rosenzweig et al, 1948) gauges intropunitive vs. extropunitive behavior, while the Children's Locus of Control Scale (Bialer, 1960, 1961), the Children's Picture Test (Battle and Rotter, 1963), and the Intellectual Achievement Responsibility Questionnarie (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 (Karp and Konstadt, 1963) is designed to explore the field dependence vs. field independence construct (Witkin et al, 1954).

The RP-F, CLC and CEFT have heretofore been used with subject populations including both normal and retarded children. However, to date, the CPT and IARQ have been administered 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 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 development 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 <u>internal</u> frame of reference with increasing age.

METHOD

Subjects:

Additional data (to be incorporated into our final report) is presently being drawn from parochial school and institutionalized retarded groups who are comparable to those already sampled. This is aimed at doubling our total sample size. It is expected that the results thus provided will yield broader implications for the education of the retarded. Consequently, the present interim report is based on the data from subjects which represent a partial sample. Interpretations drawn from such data must be considered in that light.

The subject sample consisted of 30 EMR children at each of the CA levels 9, 11, 13, and 15 years -- drawn from special classes of the New York City Public schools (N=120). For our purposes, the given CA level included a period roughly 6 months above and below the given level. For example CA 9 covered 8-6 to 9-5. The sample ranged in IQ from 50 to 75, in CA from 8-6 to 15-4, and in MA from 4-3 to 12-0. It should be noted that the data obtained from 15 seven year old pilot subjects were not included in the analysis (as had originally been planned). The pilot study findings had indicated that the cognitive and verbal requirements of the various instruments were probably not within the capabilities of the seven year old retardates which were available to us.

Subjects were selected if they met the following criteria (hence do not constitute a completely random sample):

1. IQ scores were within the range of 50 to 75.
2. No severe emotional problems or physical disabilities were noted on the school record cards.
3. English was the dominant language spoken at home (this criteria was observed only in selection of the younger half of the sample).

In addition, care was taken to balance the sample population in regards to race and sex of the subjects. The present total sample composition is presented in Table I.

Materials and Procedure

Each S was seen individually, and the following instruments were administered in two separate (A.M. and P.M.) sessions in the given order:

Intellectual Achievement Responsibility Questionnaire (IARQ). The original children's IAR scale (Crandall et al, 1965) is composed of 34 forced-choice items. Each item stem describes either a positive or a negative achievement experience which routinely occurs in children's daily lives. This stem is followed by one alternative stating that the event was caused by the child and another stating that the even 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 authors (Crandall et al, 1965) state that they specifically designed the scale to differ from the Children's Locus of Control Scale and the Children's Picture Test of Internal-External Control in three crucial dimensions: a) It is designed to assess children's beliefs in reinforcement responsibility exclusively in intellectual-academic achievement situations, b) the test limits the source of external control to those persons who most often come in face-to-face contact with a child--his parents, teachers, and peers, and c) it was constructed to sample both positive and negative events for which an individual could accept responsibility.

The test has been used in a major study by Crandall, Katkovsky, and Crandall (1965) with 923 normal elementary school children from third to twelfth grade. They found that the scale had little relationship with intelligence and socio-economic status, a slight general tendency for positive, negative and total I-scores to increase with age; and total I scores correlated positively and significantly with almost all achievement test measure.

In the present study, the original IARQ scale was used to test a pilot population of 10 educably mentally retarded children who were all around 9 years of age. The results obtained from this sample made it evident that the meaningful use of this instrument with the educably mentally retarded would necessitate a modified and more simple IAR scale more suitable to the cognitive and the verbal skills of the intended subject population. Consequently, the scale was reduced in size from 34 to 24 items; and two examples were introduced as a "warm up" to precede the test items. All 24 items are modifications of the questions introduced in the original IARQ--no new items were added. Samples of original and modified IARQ are presented in Appendix A_1, and Appendix A_2.

With the present sample a reliability of .57 was obtained, using Cornbach's alpha (reliability via variance).

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 scored along a seven-point scale with three degrees of internality, three of externality, and a nondiscriminatory midpoint. The higher the score the more external the orientation.

In a major study utilizing the Children's Picture Test, Battle and Rotter (1963) studied 80 sixth and eighth grade Negro and white children selected on the basis of sex, social class, and ethnic group membership. The Bialer-Cromwell Locus of Control Scale was used in the study to "determine its relationship to the projective test being studied."

Some of the results are significant for our present purposes. The findings were, a) a relationship between internal-external control between the attitudes and social class and ethnic group, b) significant correlation between the Bialer-Cromwell Locus of Control Scale and the CPT, and c) the overall

findings lend support to the construct validity of the internal-external control variable as a generalized personality dimension.

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 B.

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

The CEFT (Karp & 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 & Konstadt, 1963). The subjects were randomly selected from student populations in N.Y.C. from neighborhoods of diverse ethnic, religious, and racial composition. Validity coefficient 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.

Witkin et al (1966) using both EFT and the children's version of that test, evaluated educable mentally retarded boys in both a special class and an institutional setting. Witkin found that field independent MR constitute the preponderance of children being served in specialized settings (schools and institutions) for the retarded. He suggests that mildly mentally retarded field dependent students remain in regular school programs because of associated personality and behavioral patterns. The implications of Witkin's initial probe into the area of mental retardation has major implications for future research.

In a paper to be read at the Eastern Psychological Association meeting, Irving Stuart (1966) concludes that there is a relationship between perceptual field independence and reading ability. He notes, "Conclusions suggest the

matching of instructional techniques to perceptual style for optimum effects of remedial procedures."

With the present sample, Cronbach's alpha (reliability via variance) was utilized, and a reliability of .85 was obtained. Sample plate of the CEFT is presented in Appendix C.

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 other times a girl. The instructions deliberately stress the game aspects of the test.

For the purposes of this study, major attention was directed to the direction of aggression variable. Our concern in the Extrapunitive-Intropunitive dimension which has been previously investigated by Angelino and Shedd (1956). Using 102 mentally retarded (IQ's 80 and below) ages 6 to 13, those authors found significant differences in the direction of agression at different age levels between the retarded and the Rosenzweig norm group. They concluded that beginning with a basically extrapunitive response, retardates progress to a basically intropunitive response, reaching each level of reaction aproximately two years later than the norm group.

The present study employed the individual oral card-by-card administration method discussed by Lipman (1959) and Mimmow (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 D.

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 characteristically construes event outcomes (both positive and negative) as being consequential to his own actions (i.e., internally controlled) rather than as due to the whims 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 indicating 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 orientation).

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 S's, found an adjusted split-half reliability of .87; and McConnell (1962) obtained a test-retest reliability coefficient of .73 with 18 retarded S's. Gozali and Bialer (1968) obtained test-retest reliabilities of .84 and .87 with original and reverse 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.

With the present sample an alpha reliability coefficient of .43 was obtained.

The questionnaire was originally constructed for a study designed to test hypotheses regarding the developmental aspects of the ability to conceptualize success and failure (Bialer, 1960, 1961). The subject population consisted of a combined group of 89 EMR and normal children, of both sexes, ranging in CA from 6-3 to 14-3 and in MA from 3-10 to 15-9. As predicted, with increasing age there was a significant tendency toward an internal locus of control--with MA being a more relevant developmental variable than CA; and the LC scores correlated significantly both with ability to delay gratification and with response to success-failure cues.

The later findings of Land and Vineberg (1965) are among those which have corroborated Bialer's results and strengthened the validity of the LC construct. In the Land and Vineberg study, administration of the Bialer-Cromwell LC scale to 36 blind children led to the predicted findings that blind children tend to be more externally controlled than do sighted children and that with increasing mental age there was a significant tendency for locus of control to become more internal.

Other findings of particular relevance to our present project includes the following:

a. McIntyre (1961) found a significant positive correlation between scores on the Children's Locus of Control Scale and those on a modification of Witkin's Embedded Figures Test (Witkin, 1954), indicating that ILC was related to field independence. There was also a high significant correlation between IQ and EFT scores.

b. Butterfield and Butterfield (1961) found that ELC retarded children showed higher achievement levels than did ILC retardates with teachers whose values differed from those of the students (i.e., ELC individuals may respond more to the values of those around them).

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 sub-tests were employed since the spelling subtest turned out to be too time-consuming.

RESULTS

The results will be delineated in accordance with the data relating to empirical objectives and those relating to specific hypotheses. The tables illustrating the findings follow the reference section of this report.

Empirical Data

The means, standard deviations, and ranges for the various CA levels and for the total sample on the descriptive variables of Chronological and Mental Ages (in months), on the personality scales, and on Reading and Arithmetic Grade Level are shown in Table II.

The relationships among the personality scales to each other and to WRAT scores were examined by correlational techniques (Pearson r) at each age level and for the group as a whole. Tables III, IV, V, and VI summarize the relationships at ages 9, 11, 13, and 15, respectively. Table VII gives analogous results for the total sample.

As Table III indicates, at CA 9, CEFT and RP-F (I) are significantly correlated ($p < .01$); and there is a significant negative relationship ($p < .05$) between RP-F (I) and RP-F (E) as well as between RP-F (M) and RP-F (E). There is also a positive relationship ($p < .05$) between the arithmetic subtest of the WRAT (AGL) and RP-F (M). No other correlations were significant.

At CA 11 (Table IV) there is a significant positive relationship ($p < .05$) between CEFT and RP-F (I), and between IARQ and RP-F (I). Within the RP-F itself, there is a significant positive correlation between I and M ($p < .05$) and a negative correlation between E and M ($p < .05$). In regard to correlations with achievement, Table IV shows that AGL is significantly related to IARQ, CPT, and RP-F (M). There were no signficant relationships between reading scores (RGL) and the personality scales.

Table V (CA 13) indicates a signficant negative correlation ($p < .05$) between RP-F (E) and RP-F (M) as well as a positive correlation between CEFT and AGL ($p < .05$). No other findings were significant at this age level.

For the 15-year-old sample, Table VI notes negative relationships ($p < .05$) between IARQ and CLC, CEFT and RP-F (E). Significant negative correlations are also obtained within the RP-F between E and I and between E and M. A positive r ($p < .01$) was derived for CEFT and RP-F (M). There were no significant relationships between either AGL or RGL and personality measures at this level.

Table VII indicates that when a more adequate N is utilized, more meaningful relationships are observed. Thus, significant correlations are obtained between CEFT and IARQ ($p < .05$), CEFT and RP-F (I) ($p < .01$), CEFT and RP-F (M) ($p < .01$) and between IARQ and RP-F (I) ($p < .05$) and IARQ 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. IARQ and

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 relationships were apparent for the total sample.

The relationships between scores on specific personality scales and academic success and failure were examined by a series of Chi Square analyses for each academic area at each age level and for the group as a whole. For purposes of this analysis, academic failure was defined as performance at more than one-half year below MA expectancy. Due to the limited sample size at specific age levels, there were inadequate observed cell frequencies to sustain the analysis at those levels. Consequently, we are herewith concerned only with the analysis of the total group data. Table VIII summarizes that analysis. Perusal of that table shows significant Chi Square values between IARQ and achievement in both Reading and Arithmetic, between CEFT and Arithmetic achievement, and between CPT and Reading achievement. The remaining relationships were not significant.

Common personality dimensions of the several scales at the various CA levels could not be derived due to inadequate sample size at each age level. However, common dimensions were derived through factor analysis of the data from the total sample. In addition, relationships involving the WRAT were factor analyzed along with those of the personality scales. Table IX shows both the unrotated and rotated (Quartimax) factor matrices for all pertinent variables. As indicated, two factors were derived through Quartimax rotation. Factor A consists of IARQ, CEFT, RP-F (I), RP-F (M), RGL, and AGL. Factor B is comprised of a positive loading for RP-F (E) and a negative loading for RP-F (M).

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 IARQ, CEFT, CPT, CLC, RP-F, and WRAT are presented in Figures A, B, C, D, E, and F, respectively. Inspection of the figures indicates a developmental trend from lesser to greater internality with increasing CA.

Hypothesis Testing

H 1: There is a significant relationship between the various personality scales at all CA levels.

The findings pertinent to this hypothesis have already been discussed in the section on empirical data in regard to Tables III, IV, V, and VI. However, we will limit our subsequent interpretations to the data outlined in Table VII which has also been discussed above as relating to the relationships among the various scales for the group as a whole.

H 2: 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 described above. In addition, Duncan's technique

was utilized to compare the differences between each age group on each of the personality and achievement trends. Duncan's test of significance indicated the following:

1. IARQ. There is increasing internality from CA 9 to CA 13. However, there is no significant difference between CA 13 and CA 15 (see Tables X, XI, and XII).

2. CEFT. There is a significant trend toward greater internality from CA 11 to CA 15. No apparent difference between CA 9 and CA 11 (see Tables XIII, XIV, and XV.)

3. CPT. No significant trends were derived.

4. CLC. Significant trends are observed between ages 9 and 11, 9 and 13, and 9 and 15. Other trends were not significant (see Tables XVI, XVII, and XVIII).

5. RP-F (E). There was an overall significant diminishing of the (E) response from CA 9 to CA 15. However, no differences emerged between 9 and 11 and between 11 and 13 (see Tables XIX, XV, AND XXI).

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, with no difference between CA 9 and CA 11. Significant increases were also observed from CA 11 to 13 and 11 to 15, with no differences between CA 13 and 15 (see Tables XXII, XXIII, and XXIV).

7. RGL. Reading achievement increases between CA 9 and 11, CA 9 and 13, and CA 9 and 15. There is a leveling off between CA 11 and 13; and the increment continues between CA 11 and 15 and between CA 13 and 15 (see Tables XXV, XXVI, and XXVII).

8. AGL. There is a continuous developmental increment in arithmetic achievement from one age level to the next (see Tables XXVIII, XXIX, and XXX).

In order to determine which was the more relevant developmental variable, partial correlations were obtained between MA and CA and each of the tests employed with N=120.

When MA was controlled, the following significant correlations ($p < .01$) were obtained with CA: (a) CA-IARQ=.33; (b) CA-RGL=.37; (c) CA-AGL=.47.

When CA was partialled out, the following significant correlations ($p < .01$) were obtained with MA: (a) MA-CEFT=.28; (b) MA-AGL=.30.

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, on the one hand, or the environment, on the other, exercises the greater 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 investigation differed from the original proposal in two respects: (a) it did not contain a sample of seven-year-old S's; and (b) the sample was taken exclusively from the special classes of the New York City public schools. The seven year olds were excluded primarily on the basis of pilot study results which indicated the inability of that age group to respond adequately to all of the instruments employed. The exclusive use of public school children was due to the consideration that this particular sample represented the groups to which major generalizations would be made; and as large a sample as possible was therefore desired. In addition, it was projected that a budget adjustment would be requested to provide for gathering data on additional subjects from institutions and parochial schools. The use of budgetary funds for this purpose has been approved, and additional data is currently being gathered.

Although we have previously herein presented statistical data for each of the chronological age levels (9, 11, 13, 15) as well as for the entire group of 120 S's, for purposes of this interim report, major emphasis will be given to interpretation of the findings for the group as a whole (N=120). We are imposing this limitation on our conclusions for the following reasons: (a) with the N of 30 S's at each CA level, it seems hazardous to draw meaningful implications from the limited number of significant relationships which emerged; (b) the additional data presently being gathered is aimed at doubling the sample size at each age level; and it is expected that a subsequent statistical analysis based on N=60 at each level will yield more meaningful results; (c) although specific personality-achievement relationships were significant at given age levels, there were few consistent relationships across the CA range--again making meaningful interpretation difficult; and (d) information obtained from the present sample of 120 S's seems to represent an adequate pool from which we may infer those trends which will emerge more strongly when the data from the final sample of 240 S's becomes available.

It was originally hypothesized that there would be a significant relationship between the various personality scales at each CA level (which necessarily implied that this relationship would hold for the total sample). This hypothesis was sustained--with certain exceptions to be presently noted.

In examining the overall results, it is evident that a significant relationship was maintained between the modified IARQ, the CEFT, and each of the three components of the PP-F. It is important to note that while

the relationships are essentially positive, the (E) dimension of the RP-F correlated negatively with CEFT and with the (I) component of the RP-F. These results lend weight to the validity of the construct of internal-external dimensions of personality as well as to the various scales involved. The positive correlation between the (M) and (I) dimensions of the RP-F, along with the negative loading of (M) with (E) in the factor analysis, further suggest that caution should be exercised in interpreting (M) as indicating an essentially neutral response among retardates.

However, while the CEFT, the modified IARQ, and the RP-F appear to be highly related, the converse seems to be true of the CPT and CLC with our present sample. It is noteworthy that these latter scales showed a consistent non-relatedness to each other as well as to the other personality measures--both at all CA levels and for the total sample. It seems clear from these findings that CPT and CLC measure different aspects of personality than those tapped by the modified IARQ, CEFT, AND RP-F in our sample. 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. Obviously, the parameters of the relationship need further study. Crandall also found that whereas CLC and IARQ showed a significant relationship in boys, there were no corresponding relationship among the female subjects.

A number of variables seem to be instrumental in the lack of relationship between CLC and the modified IARQ 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 modified IARQ. 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 S's. It will be important to see if the apparently total independence among the CLC, CPT, and modified IARQ are maintained when the final data are analyzed.

Another aspect of this study was to investigate the relationships of the personality scales and academic achievement in reading and arithmetic. The Wide Range Achievement 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 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 and for the total population. In the present population the anticipated distribution did not occur.

It can be readily seen that the mean RGL at CA 9 was 1.12 and that at CA 15 it was only 2.96. For the total sample, the RGL ranged from .01 to 7.2 with a mean of 1.95 and SD of 1.26. These 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 effects those for the entire population. The

AGL scores for the entire group range from .02 to 5.9 with a mean of 2.41 and SD of 1.2. These results indicate a more meaningful distribution of scores at this juncture it is difficult to identify the reasons for these divergent findings.

One might conjecture that the WRAT is not a discriminating instrument or that it is unreliable for this population. Another possibility would be that the students in this sample have simply not learned to read and to do arithmetic at the level generally expected of educable retarded children. The quality of teaching, major deficiencies in experiential background, and a host of other factors could be considered to explain the findings. The additional samples from parochial and institutional educational programs now being gathered should shed some light on this aspect of the present study. Despite the limitations of the achievement data, Table VII indicates that significant relationships were obtained between the modified IARQ and reading, between reading and arithmetic, and between CEFT and reading for the total sample population. In addition, all the dimensions of the RP-F showed a significant relationship with both reading and arithmetic. It is evident from these results that relationships among certain personality scales also encompass an additional relationship with achievement.

In analyzing these relationships further, a factor analyses yielded two factors as shown on Table IX. Factor A which includes loadings of IARQ, CEFT, RP-F (I), RP-F (M), RGL, and ACL appears to represent an Enternal Achievement Responsibility Factor; and Factor B which contains positive RP-F (E) loading and negative RP-F (M) loading represents an Externality Factor. These findings add further validity to the construct of internal-external personality dimensions and strongly suggest that these dimensions, as measured by modified IARQ, CEFT, and RP-F are related to academic achievement.

The exploration of the relationship between the personality variables and academic success and failure also revealed some interesting observations regarding the achievement levels of our retarded subjects.

The limited range in mean reading grade from CA 9 to 15, with its accompanying skewed distribution encompassing an overabundance of poor readers led to difficulty in analyzing the results. It was found that at ages 9 and 11 there were few cases of failure, while values at ages 13 and 15 there were few cases of success. Significant Chi Square values were not obtained at any age level between the personality scales and academic success and failure. When the analyses were carried out using the total group, significant relationships were found between the modified IARQ and reading ($p < .05$), between IARQ and arithmetic ($p < .05$) and between CEFT and reading ($p < .01$). These findings are consistent with the previous correlational analysis and strongly suggest that the modified IARQ and the CEFT not only show a relationship with reading and arithmetic, but have value in prediction of success and failure in these academic pursuits. It would be anticipated that these relationships will be further clarified with the increase in sample size at each age level.

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 general, the hypothesis was sustained. This is clearly evident in the graphic presentation in all cases except that for the CPT.

However, the statistical analysis indicates that the between-age mean differences, although often in the expected direction were sometimes non-significant, and there is a further indication that each of the scales represents a different devleopmental sequence. For example, the modified IARQ reveals a consistent developmental pattern from lesser to greater internality with a plateau at year 13. The graphic data indicates continued growth in internality; but the statistical findings reveal that the mean differences for years 13 and 15 do not differ statistically.

The CEFT also presents a consistent developmental pattern from dependence to independence from year 9 to 15. It is noteworthy, however, that the mean differences between ages 9 and 11 do not differ statistically and, that the major movement toward field-independence appears to start between ages 11 and 13 and continues through age 15.

The trend analyses for the CLC indicates that there is a shift toward internal control at year 9 and a plateau from ages 11 to 15. The statistical analysis indicates no difference in mean scores for years 11, 13, and 15; but there is a significant difference at all of these ages when compared to year 9. Considering the findings of previous research, it is possible that the upward trend for the CLC starts <u>before</u> age 9, and that our sample has tapped only the upper portion of the external to internal trend. A specific sample of children below CA 9 would be essential to evaluate this possibility.

The CPT in this study did not show any statistical trend and was apparently unable to discriminate with our population. This may be due to its limited sampling of behavior and its rather amorphous structure.

The trend analysis of the RP-F dimensions indicates that Extrapunitiveness (E) plateaus from 9 to 13 and then decreases after age 13, Intropunitiveness (I) shifts after age 11 and plateaus at age 13, and Impunitiveness (M) increases after 9 and plateaus at age 11. In the case of the (E) dimension, an extension of the age range upwards appears appropriate in order to evaluate if this decriment in E continues. In the case of the (M) dimension, an extension of the age range downward is suggested in order to evaluate if we have sampled the upper end of a developmental curve. The developmental trend in the RP-F dimension strongly suggests that the time between ages 11 and 13 are crucial for the developmental of intropunitiveness as a response to frustration.

The partial correlations between both MA and CA and the behavioral variables has indicated that with some of the latter, CA was a more relevant developmental dimension, whereas with others, MA seemed to be more relevant. The reasons for these findings are not immediately discernable. Perhaps when the additional data is added to the analysis the various differential relationships will become clarified.

For the present, our data strongly suggests that the modified IARQ, the CEFT, and the RP-F may be useful for diagnostic and predictive purposes in the academic achievement of the mentally retarded.

SUMMARY AND CONCLUSIONS

The present results must be viewed in the context that the data under consideration represent only a portion of the total findings to be analyzed eventually. Since this was a correlational study, it is fully recognized that the relationships found may be due partially to the statistical artifacts of limited sample size and unrepresentative distributions and that the results may be altered radically with the inclusion of the additonal subjects.

Within the context of these limitations, the following findings appear to represent those trends in the present sample which are expected to be sustained with the increase in the total sample size.

1. A significant relationship exists between specific personality scales and achievement. These personality scales include the modified Intellectual Achievement Responsibility Questionnaire (IARQ), the Children's Embedded Figures Test (CEFT), and the Rosenzweig Picture-Frustration Test (RP-F). Throughout the analysis this constellation of scales has shown consistency in their relationships to each other, have been identifiable as distinct factors in the factor analysis, have been related to success and failure in academic achievement, and have shown significant developmental trends in both the empirical findings and the statistical analyses. Consequently, they appear to show great promise as clinical diagnostic tools which may be highly relevant in academic settings for the mentally retarded.

2. The lack of relationship of the Children's Picture Test (CPT) and the Children's Locus of Control (CLC) to each other or to any of the variables studied is noteworthy. This non-relationship was consistent at almost every age level and in the present total sample. These findings strongly suggest that the latter tests of internal vs. external control are apparently measuring different aspects of these dimensions than are being measured by the IARQ, the CEFT or the RP-F. More specifically, the CPT and CLC appear to tap the more global, abstract aspects of the internal-external dimension as compared to those tapped by the rather concrete, structured, situationaly based materials in the CEFT and the IARQ.

3. The observed developmental trends were all in the expected direction. Significant trends were noted in all behavioral scales except the CPT. Particularly meaningful were those trends involving the IARQ, CEFT, and RP-F. However, even in those cases, the specific age levels of this study did not allow for definitive data as to points of shift from externality to internality. Nevertheless, the consistency of the obtained data strongly suggests the validity of the personality dimension; and the sample apparently needs expansion in size and in age levels for more definitive findings.

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Table I

Population Break Down According to Race and Sex

	White	Non-White	Total
Male	30	36	66
Female	22	32	54
Total	52	68	120

Table II

Means, Standard Deviations, and Ranges of Descriptive Variables, Personality Scales and Reading and Arithmetic Grade Level for Educably Mentally Retarded Children

Variables		Age 9(N=30)	Age 11(N=30)	Age 13(N=30)	Age 15(N=30)	Total(N=120)
MA	$\bar{X}$	70.30	84.50	94.73	114.13	90.91
	R	57-84	67-101	70-112	92-144	57-144
	SD	7.38	10.54	13.57	16.06	20.17
CA	$\bar{X}$					142.64
	R	102-113	125-143	150-160	174-185	102-185
	SD					26.52
IRAQ	$\bar{X}$	12.00	13.66	15.50	16.46	14.40
	R	6-19	8-21	9-22	10-20	6-22
	SD	3.86	2.89	3.29	2.44	3.48
CEFT	$\bar{X}$	4.46	4.76	7.43	10.43	6.77
	R	1-11	0-10	1-16	3-20	0-20
	SD	2.60	2.23	4.68	5.01	4.52
CPT	$\bar{X}$	15.46	14.46	14.23	14.13	14.57
	R	9-26	6-23	9-22	6-23	6-26
	SD	4.50	4.03	3.57	3.81	4.03
CLC	$\bar{X}$	12.50	10.93	12.83	13.23	12.37
	R	4-18	4-18	8-19	9-18	4-19
	SD	3.53	2.97	2.78	2.17	3.03
RP-F(E)	$\bar{X}$	11.06	9.20	8.86	8.73	9.46
	R	3-20	1-17	5-15	4-17	1-20
	SD	4.00	4.15	2.90	3.09	3.70
RP-F(I)	$\bar{X}$	4.16	4.43	5.46	5.93	5.00
	R	0-10	0-0	1-10	3-9	0-10
	SD	2.38	1.66	1.94	1.50	2.03
RP-F(M)	$\bar{X}$	5.10	8.33	7.26	8.50	7.30
	R	0-11	2-15	2-15	2-12	0-15
	SD	2.65	3.33	3.09	2.66	3.24
RGL	$\bar{X}$	1.12	1.81	1.93	2.96	1.95
	R	.01-2.7	.05-4.7	.06-6.3	1.1-7.2	.01-7.2
	SD	.64	.88	1.03	1.52	1.26
AGL	$\bar{X}$	1.25	2.12	2.76	3.50	2.41
	R	.02-2.8	.06-3.6	.03-4.5	1.4-5.9	.02-5.9
	SD	.70	.73	.98	1.01	1.20

Table III

The Relationships Among the Personality Scales to Each Other and to WRAT Scores at age 9 (N=30)

Variables	MA	IARQ	CEFT	CPT	CLC	RP-F(E)	RP-F(I)	RP-F(M)	RGL	AGL
MA		.12	.24	-.22	-.09	.03	.37*	.16	.41*	.51*
IARQ			.02	-.04	.07	-.23	-.13	.28	.10	-.05
CEFT				.14	-.13	-.32	.72**	.34	.13	.14
CPT					.06	-.11	-.01	.20	-.17	-.04
CLC						-.04	-.24	.01	-.22	.05
RP-F(TE)							-.42*	-.37*	-.12	.03
RP-F(TI)								.22	.10	.27
RP-F(TM)									.30	.42**
RGL										.48**
AGL										

* Significant beyond .05 level

** Significant beyond .01 level

Table IV

Relationships Among the Personality Scales to Each Other and to WRAT Scores at Age 11 (N=30)

Variables	MA	IARQ	CEFT	CPT	CLC	RP-F(E)	RP-F(I)	RP-F(M)	RGL	AGL
MA		.23	.06	-.34	-.07	.02	.15	.22	.03	.37*
IARQ			.13	-.03	.01	-.07	.39	.16	.05	.37*
CEFT				-.10	.19	-.06	.44*	.34	.26	.18
CPT					-.21	-.13	-.06	.05	-.04	-.40*
CLC						.26	-.22	-.12	.15	.29
RP-F(E)							-.34	-.76**	-.05	-.15
RP-F(I)								.39*	-.18	.00
RP-F(M)									.32	.35
RGL										.51**
AGL										

* Significant beyond .05 level

** Significant beyond .01 level

Table V

Relationships Among the Personality

Scales to Each Other and to

WRAT Scores at Age 13 (N=30)

Variables	MA	IARQ	CEFT	CPT	CLC	RP-F(E)	RP-F(I)	RP-F(M)	RGL	AGL
MA		-.12	.23	-.01	-.16	.25	-.20	-.23	.14	.29
IARQ			-.02	.04	.07	.06	.18	-.01	-.02	.06
CEFT				.08	-.20	.13	-.11	-.01	.20	.36*
CPT					-.01	-.29	-.21	.31	.18	-.12
CLC						-.27	.07	.20	.11	-.09
RP-F(E)							-.27	-.60**	-.22	-.18
RP-F(I)								-.21	.18	.40*
RP-F(M)									-.02	-.06
RGL										.45*
AGL										

* Significant beyond .05 level

** Significant beyond .01 level

Table VI

Relationships Among the Personality

Scales to Each Other and to

WRAT Scores At Age 15 (N=30)

Variables	MA	IARQ	CEFT	CPT	CLC	RP-F(E)	RP-F(I)	RP-F(M)	RGL	AGL
MA		.03	.26	.11	-.26	-.27	.12	.36	-.22	.01
IARQ			-.16	.24	-.40*	.09	-.20	.03	.05	.00
CEFT				.05	.20	-.36*	-.04	.60**	-.08	.05
CPT					-.30	-.07	.14	.05	-.29	.12
CLC						-.23	-.01	.18	.07	.24
RP-F(E)							-.48*	-.84**	-.04	-.03
RP-F(I)								.02	.03	.10
RP-F(M)									-.03	.06
RGL										.38*
AGL										

* Significant beyond .05 level

** Significant beyond .01 level

Table VII

Relationships Between the Personality

Scales and WRAT Scores Total Sample

(N=120)

Variables	CA	IARQ	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**
IARQ			.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**
AGL										

* Significant beyond .05 level

** Significant beyond .01 level

Table VIII

Summary Table of Chi Square Analyses of Personality Scales and Academic Achievement, (N=120)

Source	x^2	df	p
IARQ--Reading	4.84	1	<.05
IARQ--Arithmetic	5.26	1	<.05
CEFT--Reading	10.22	1	<.01
CEFT--Arithmetic	.58	1	N.S.
CPT--Reading	5.79	1	<.02
CPT--Arithmetic	2.34	1	N.S.
CLC--Reading	.74	1	N.S.
CLC--Airthmetic	.38	1	N.S.
RP-F--Reading	3.41	1	N.S.
RP-F--Arithmetic	1.71	1	N.S.

Table IX

Unrotated and Rotated Factor Matrices,

Personality Scales and WRAT Scores,

(N=120)

Variables	Unrotated Matrix		Rotated Matrix	
	I	II	A	B
IARQ	-.42	.10	.42	-.10
CEFT	-.54	.10	.53	-.16
CPT	.06	-.27	-.18	-.22
CLC	-.12	.14	.17	.07
TE	-.59	.52	-.28	.73
RP-F(TI)	-.51	-.03	.44	-.26
RP-F(TM)	-.63	-.41	.37	-.65
RGL	-.57	.32	.65	.02
AGL	-.73	.36	.81	.01

Loading (.35) are considered significant. They are underlined.

Table X

Analysis of Variance Summary Table
for IARQ

SOURCE	ss	df	MS	F	p
Between	353.36	3	117.79	12.43	<.01
Within	1099.63	116	9.48		
Total	1452.99	119			

Table XI

Means and SD's for IARQ at
Each Age Level

Age Group	N	$\bar{X}$	SD
9	30	12.00	3.44
11	30	13.66	2.94
13	30	15.50	3.35
15	30	16.46	2.48

Table XII

Duncan's Technique: Matrix of Significants for IARQ

	9 Yrs.	11 Yrs.	13 Yrs.
11 yrs.	.508		
13 yrs.	10.097	1.421	
15 yrs.	15.090	6.263	-3.326

Positive values are significant.

Table XIII

Analysis of Variance Summary Table
for CEFT

Source	ss	df	MS	F	p
Between	695.36	3	231.79	15.23	<.01
Within	1765.57	116	15.22		
Total	2460.93	119			

Table XIV

Means and SD's for CEFT at
Each Age Level

	N	$\bar{X}$	SD
Age 9	30	4.47	2.65
Age 11	30	4.77	2.27
Age 13	30	7.43	4.76
Age 15	30	10.43	5.10

Table XV

Duncan's Technique: Matrix of Significants for CEFT

	9 Yrs.	11 Yrs.	13 Yrs.
11 Yrs.	-9.281		
13 Yrs.	4.752	3.682	
15 Yrs.	20.801	19.540	5.508

Positive values are significant.

Table XVI

Analysis of Variance Summary Table
for CLC

Source	ss	df	MS	F	p
Between	91.23	3	30.41	3.48	$<.05$
Within	1014.90	116	8.75		
Total					

Table XVII

Mean's and SD's for CLC at
Each Age Level

	N	$\bar{X}$	SD
Age 9	30	12.50	3.60
Age 11	30	10.93	3.02
Age 13	30	12.83	2.83
Age 15	30	13.23	2.21

Table XVIII

Duncan's Technique: Matrix of Significance for CLC

	9 Yrs.	11 Yrs.	13 Yrs.
11 Yrs.	.299		
13 Yrs.	1.690	-6.456	
15 Yrs.	3.591	-4.700	-6.091

Positive values are significant.

Table XIX

Analysis of Variance Summary Table
RP-F(E)

Source	ss	df	MS	F	p
Between	105.87	3	35.29	2.66	< .05
Within	1540.00	116	13.28		
Total	1645.87	119			

Table XX

Mean's and SD's for TE at

Each Age Level

	N	$\bar{X}$	SD
9 Yrs.	30	11.07	4.08
11 Yrs.	30	9.20	4.22
13 Yrs.	30	8.87	2.96
15 Yrs.	30	8.73	3.15

Table XXI

Duncan's Technique: Matrix of

Significance for TE

	9 Yrs.	11 Yrs.	13 Yrs.
11 Yrs.	-9.472	-8.376	
13 Yrs.	-8.182	-8.376	
15 Yrs.	1.685	1.312	.022

Positive values are significant.

Table XXII

Analysis of Variance Summary

Table for RP-F(I)

Source	ss	df	MS	F	p
Between	63.13	3	21.04	5.61	<.05
Within	434.87	116	3.75		
Total	498.00	119			

Table XXIII

Mean's and Standard Deviations for

I at Each Age Level

	N	$\bar{X}$	SD
9 Yrs.	30	4.17	2.42
11 Yrs.	30	4.43	1.70
13 Yrs.	30	5.47	1.98
15 Yrs.	30	5.93	1.53

Table XIV

Duncan's Technique: Matrix of Significance for E

	9 Yrs.	11 Yrs.	13 Yrs.
11 Yrs.	-3.961		
13 Yrs.	1.414	.238	
15 Yrs.	3.781	2.510	-2.865

Positive values are significant.

Table XXV

Analysis of Variance Summary Table for RGL

Source	ss	df	MS	F	p
Between	52.09	3	17.36	14.56	.01
Within	138.36	116	1.19		
Total	190.45	119			

Table XXVI

Mean's and SD's for RGL at Each Age Level

	N	$\bar{X}$	SD
9 Yrs.	30	1.12	.66
11 Yrs.	30	1.81	.90
13 Yrs.	30	1.94	1.06
15 Yrs.	30	2.97	1.55

Table XXVII

Duncan'a Technique: Matrix of

Significants for RGL

	9 Yrs.	11 Yrs.	13 Yrs.
11 Yrs.	.703		
13 Yrs.	1.236	-2.364	
15 Yrs.	6.771	3.117	2.584

Positive values are significant

Table XXVIII

Analysis of Variance Summary Table

for AGL

Source	ss	df	MS	F	p
Between	82.30	3	27.43	34.89	<.01
Within	91.20	116	.79		
Total	173.50	119			

Table XXIX

Mean's and SD's for AGL at Each Age Level

	N	$\bar{X}$	SD
9 Yrs.	30	1.25	.72
11 Yrs.	30	2.13	.75
13 Yrs.	30	2.76	1.00
15 Yrs.	30	3.51	1.03

Table XXX

Duncan's Technique: Matrix of Significances for AGL

	9 Yrs.	11 Yrs.	13 Yrs.
11	2.301		
13	5.639	.986	
15	9.642	4.945	1.607

Positive values are significant.

Figure A

IARQ Developmental Trend

at Each CA Level.

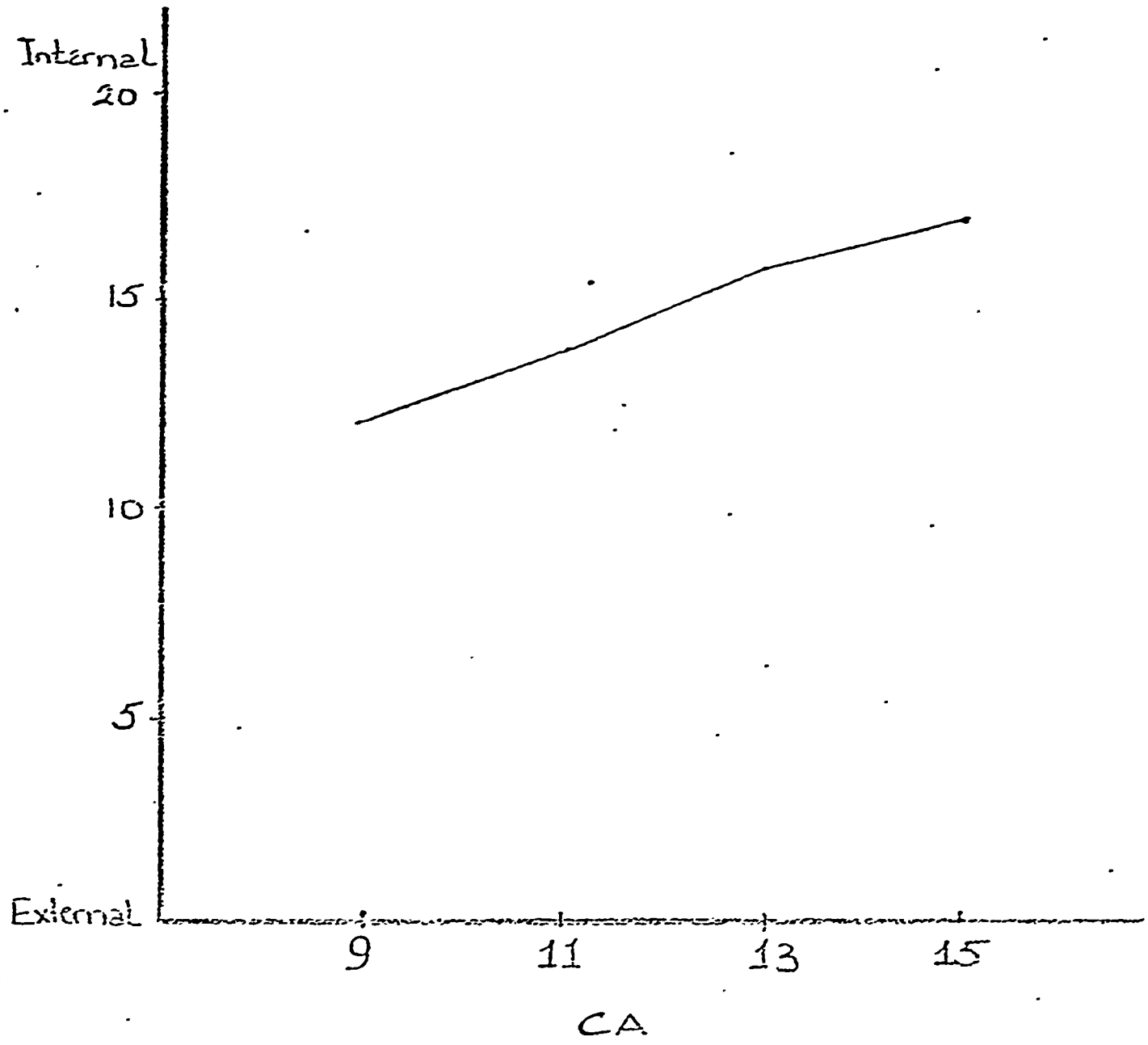


Figure B

CEFT Developmental Trend

at Each CA Level.

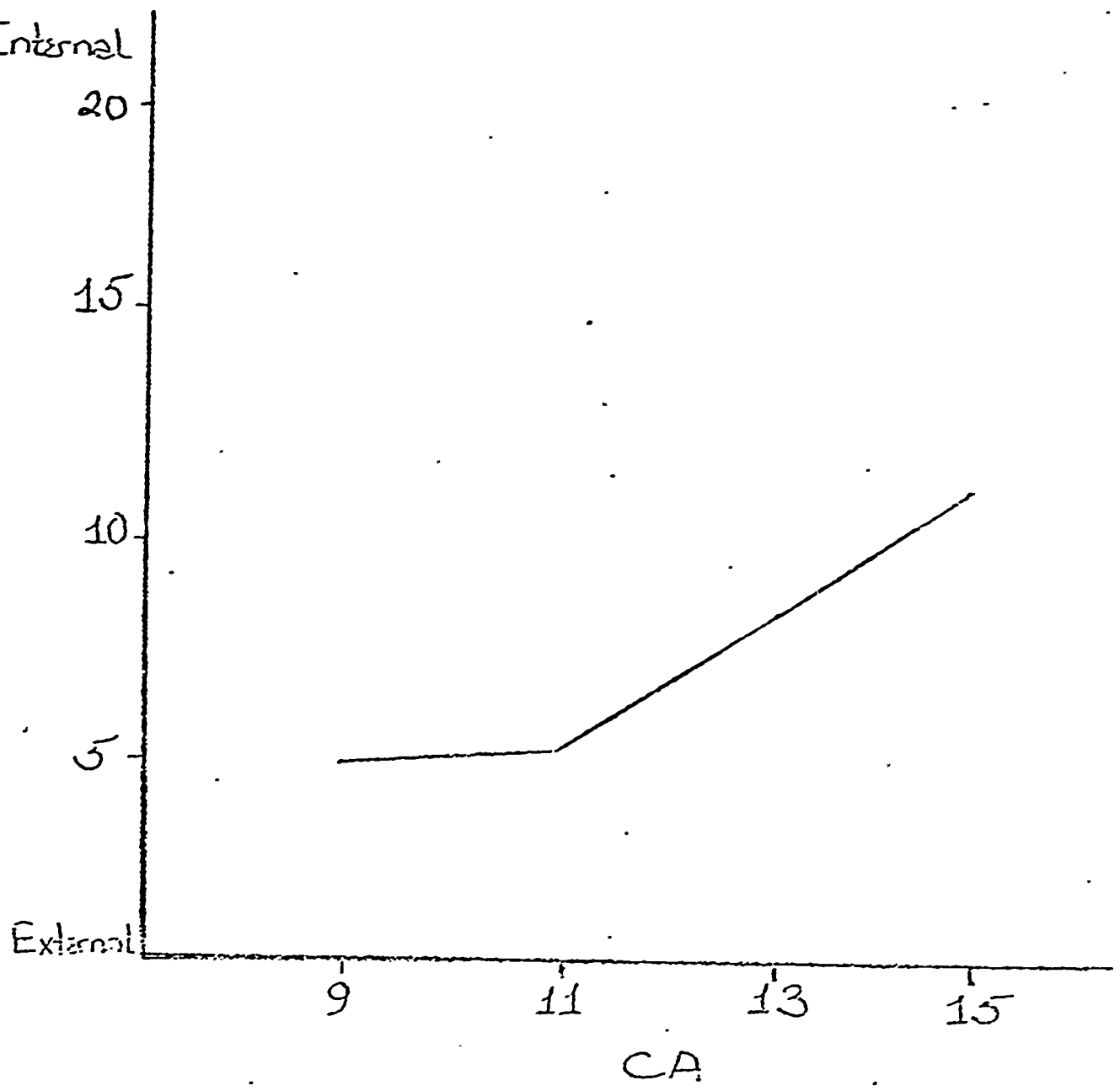


Figure C

CPT Developmental Trend

at Each CA Level.

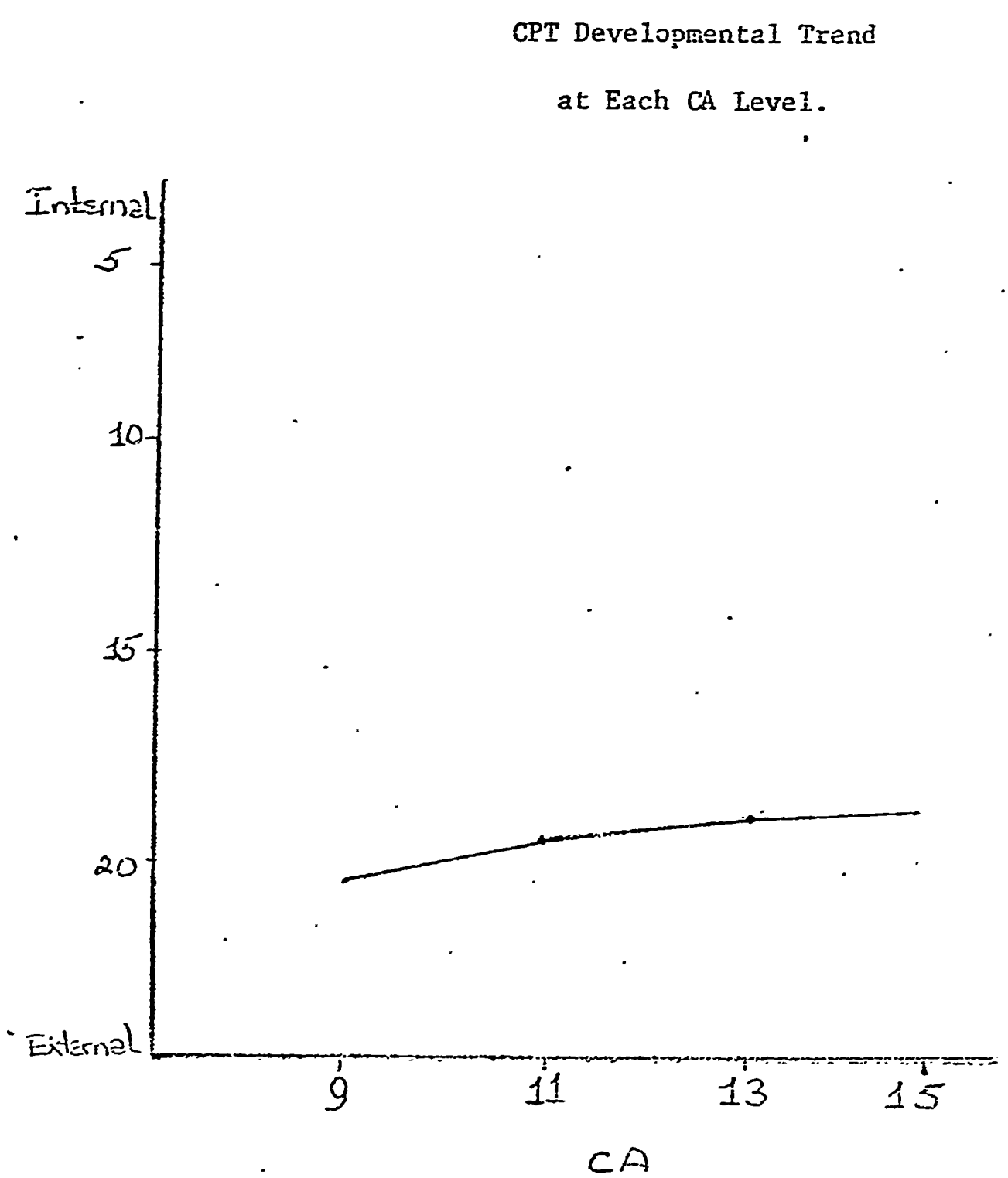


Figure D

CLC Developmental Trend

at Each CA Level.

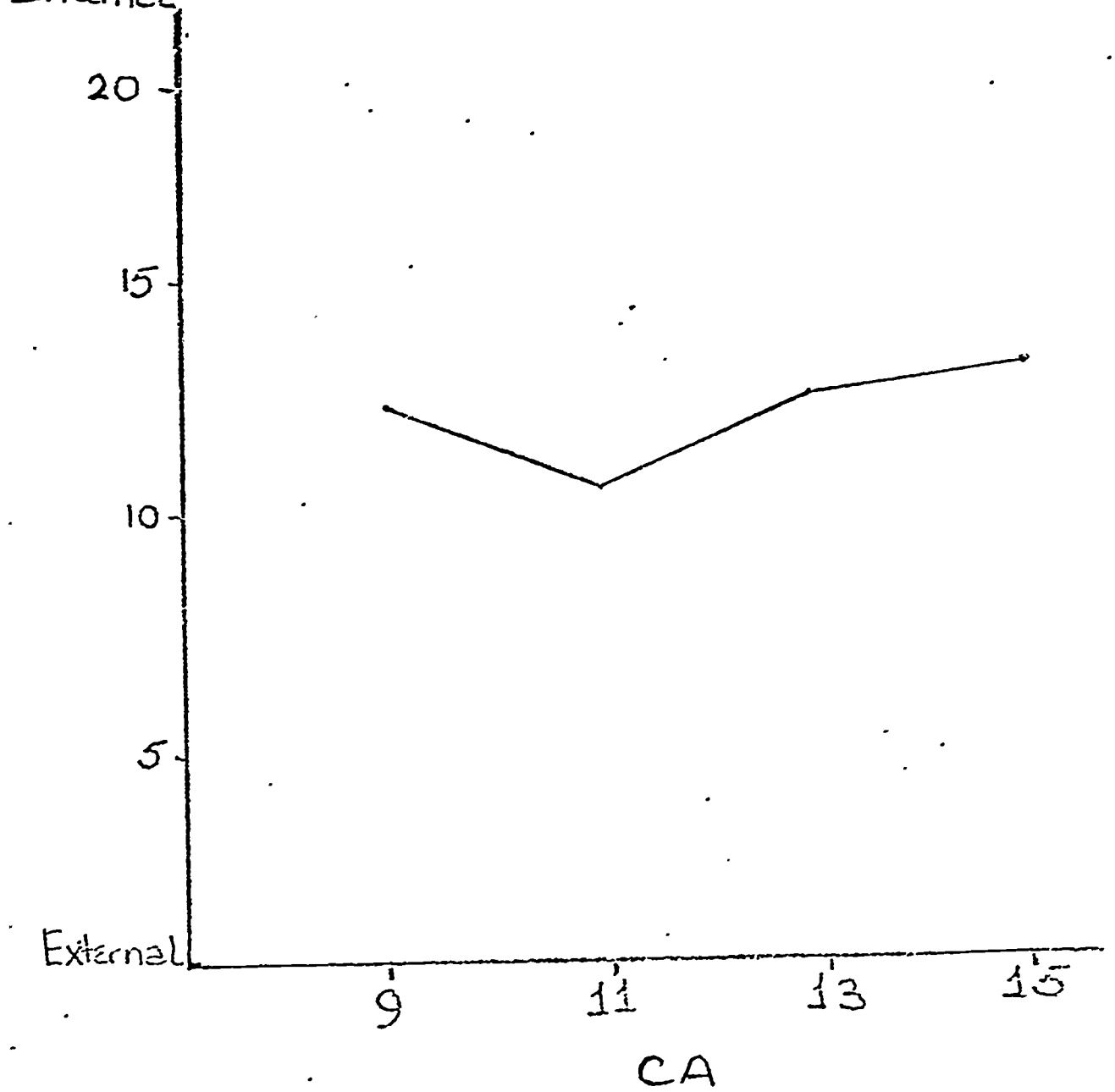


Figure E

RP-F Developmental Trend

at Each CA Level.

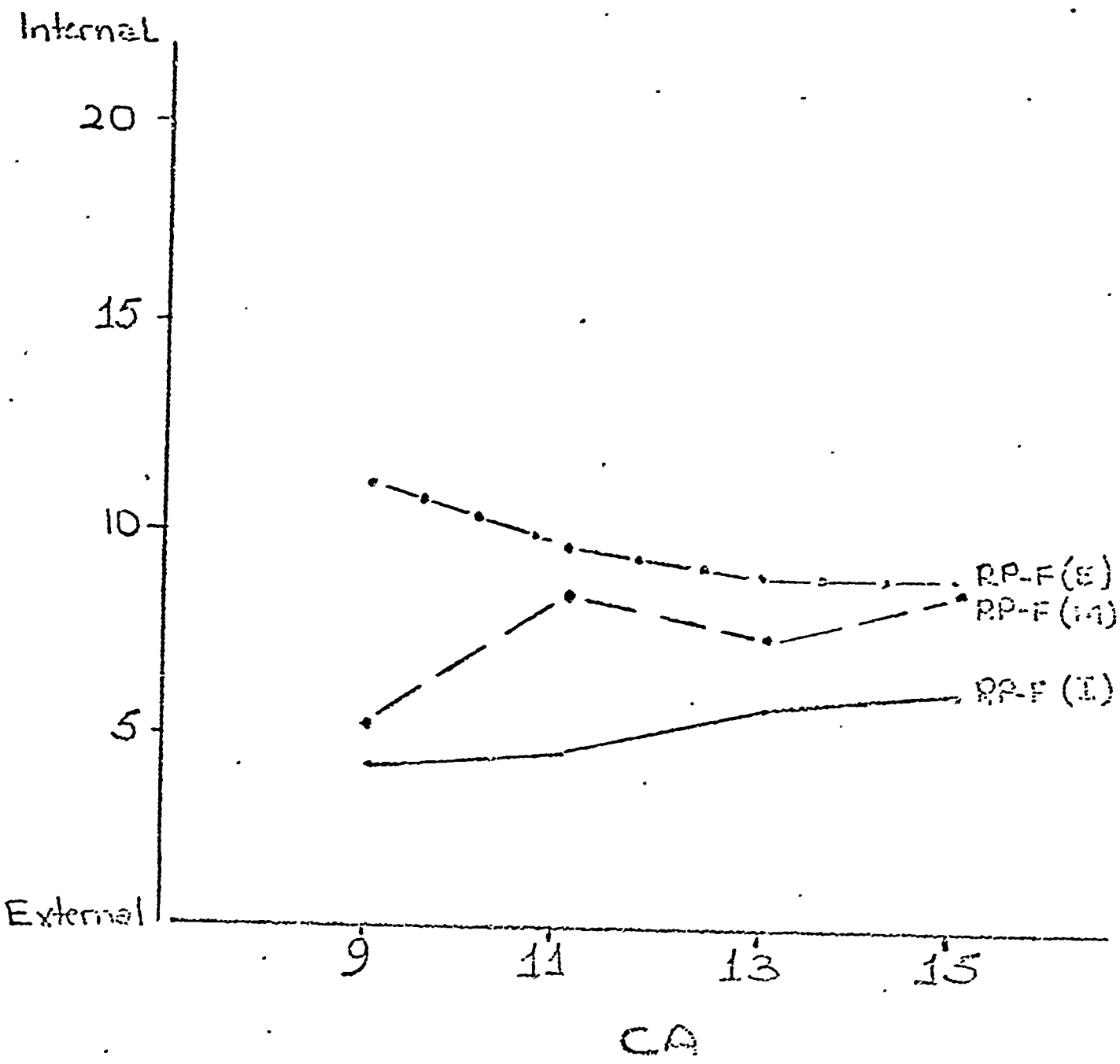
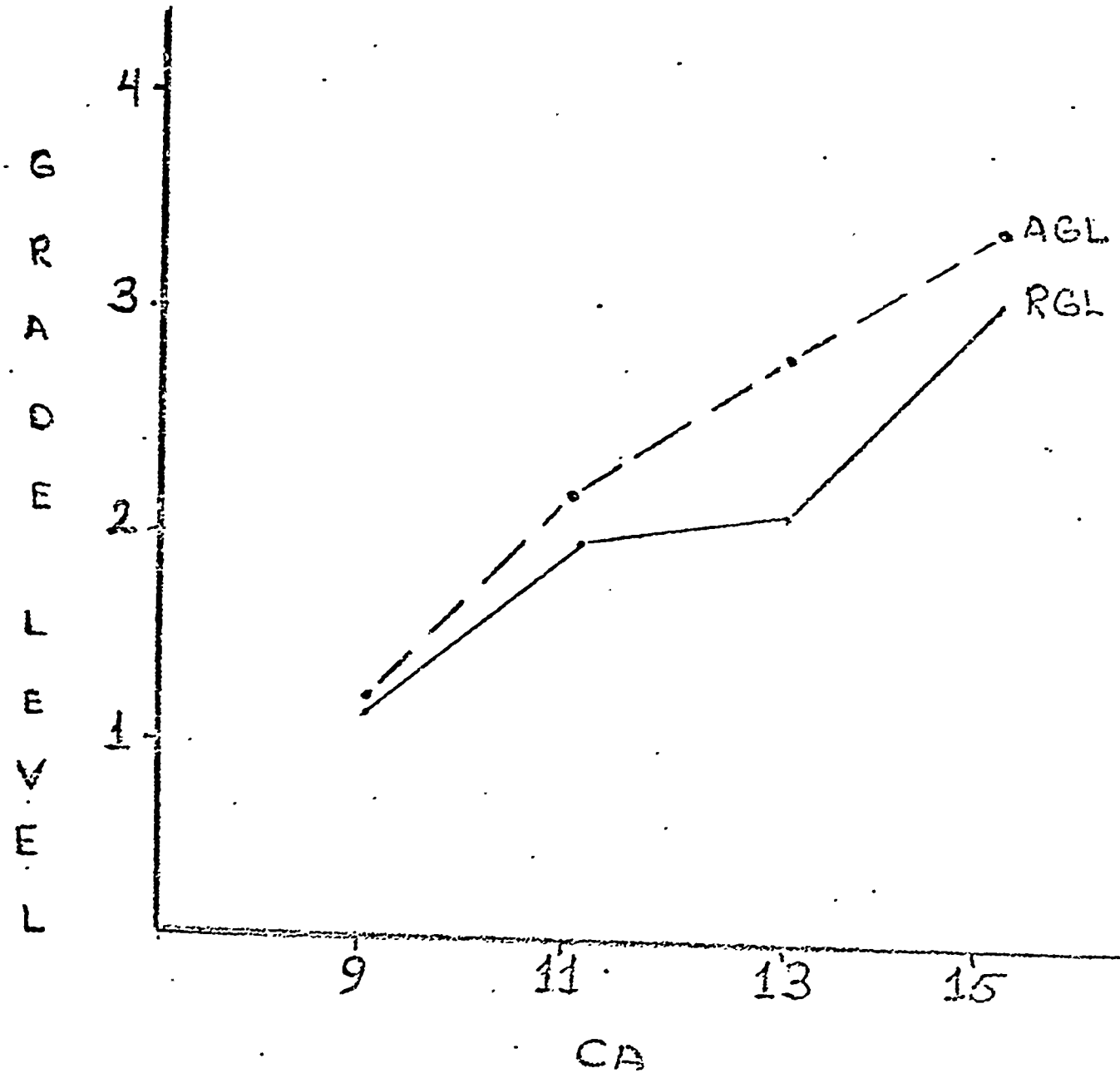


Figure F

WRAT Developmental Trend

at Each CA Level.



Appendix A$_1$

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?

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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 enccurage pupils, or
I +_____b. because you did a good job?

14. When you find it hard to work arithmetic or math problems 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 question 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?

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 problems 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?

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 explained 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?

IARQ (Modified)

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 you like best
   a) apples or
   b) oranges

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

IARQ 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 loose 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

8. If you do a puzzle quickley, 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 listern 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'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 paretns 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 feel bad

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

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

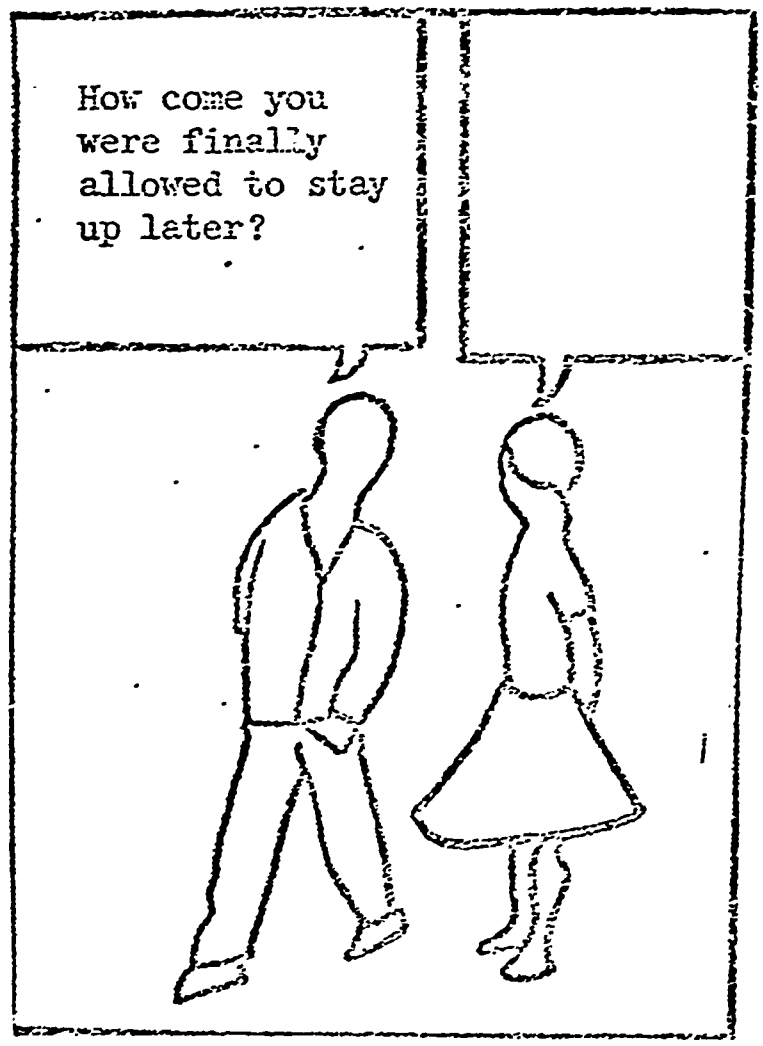
Check items

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

2. When you find it hare do understand school work, is it
-b) because you didn't listern carefully
a) because the teacher didn't explain it enough.

Appendix B

Children's Picture Test



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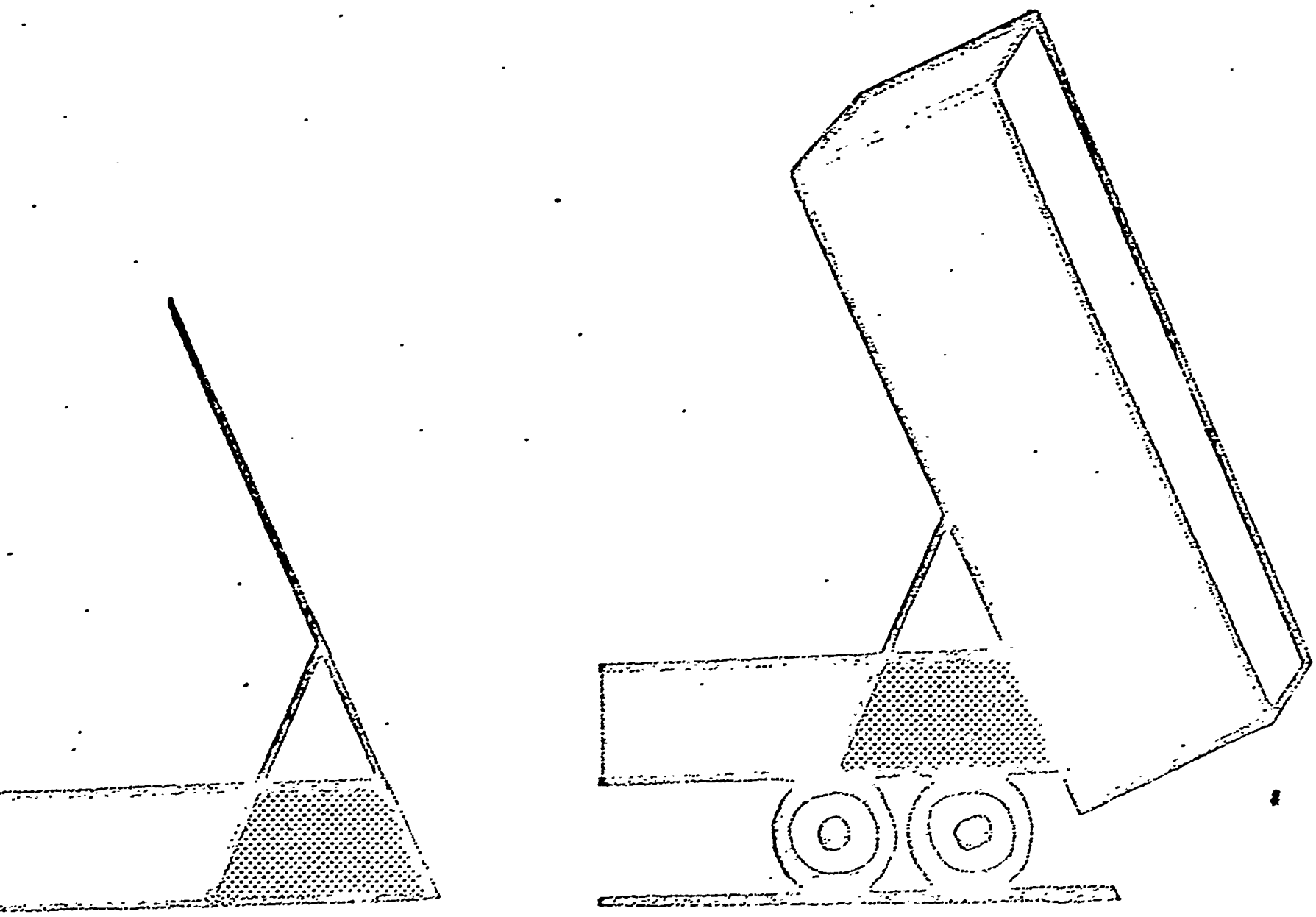
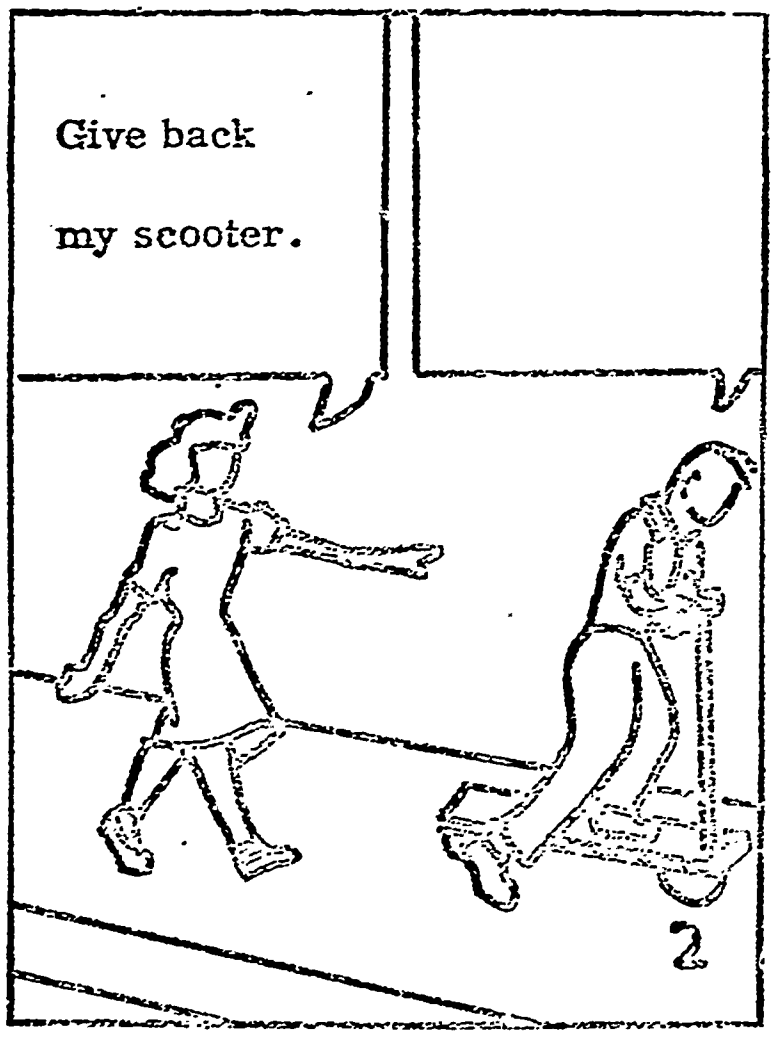
Appendix C

Children's Embedded Figure Test



Appendix D

Rosenzweig Picture-Frustration Test



Appendix E

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 question, 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 <u>you</u> 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 without 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?