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LA THÈSE A ÉTÉ
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Audio-psycho-phonological Remedial Training in Relation
to the Psycho-Social and Personality Adjustment of Five
Dyslexic Boys.

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Thesis submitted to the School of Graduate Studies of the
University of Ottawa as partial fulfillment of the
Requirements for the degree of Doctor of Philosophy
in Psychology.

Ottawa, Canada, 1982

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UNIVERSITÉ D'OTTAWA
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CURRICULUM STUDIORUM

Jeffrey Robert Donner was born January 11, 1951, in New York City. He received his Bachelor of Arts degree in Psychology and Political Science from George Washington University in 1972. He was granted a Master of Science degree in Psychology by Yeshiva University in 1974.

ABSTRACT

Audio-Psycho-Phonological Remedial Training in Relation to the Psycho-Social and Personality Adjustment of Dyslexic Boys.

The heterogeneity of the symptoms associated with dyslexia has created numerous difficulties in both its diagnosis and remediation. A. A. Tomatis has suggested a holistic theoretical formulation as well as a remedial program to alleviate this dysfunction. The remedial program emphasized the improvement in listening and language skills via high frequency sound. The present study investigated the nature of change in the psycho-social and personality adjustment of five children during the course of the remediation. Four out of the five children showed relatively strong academic progress during the remedial process. These four children also showed considerable positive change in certain areas of psycho-social and personality function. Positive change was noticed in teacher rated areas of: self adjustment, social adjustment, school adjustment, and self concept. Other interesting changes were noticed in areas of cognitive development, attention, auditory lateralization, personalization, and the child's own subjective evaluation of his strength of self. Results of this study suggest that APP remedial training positively affects the dyslexic child's academic progress. Concurrent with these gains, are changes in areas of the child's psycho-social and personality functioning as well. Caution is advised in interpretation of results, because of the lack of a control group. Further directions for research are also advanced.

Table of Contents

Chapter	Page
Introduction	i
I Review of Literature	1
Concepts of Dyslexia	2
Dyslexia: A Composite Definition	12
The Development of Language and Its Relationship to Reading	16
Theoretical Approaches to Reading	21
Perceptual-Cognitive Approaches	22
Psychoanalytical and Ego Psychology Approaches	23
Tomatis' Approach to the Development of Languages, Reading and Dyslexia	26
Theoretical Foundations	26
Developmental Prerequisites	29
Hemispheric Lateralization and Language	32
Learning and Dyslexia	34
Empirical Contributions to the Psycho-Social and Personality Variables in Dyslexia	35
Social Perception and Interpersonal Skill	37
Self Concept	41
Frustration-Aggression	45
Remediation of Dyslexia: Contemporary Approaches	50
Audio-Psycho-Phonology: Re-education via the Electronic Ear	54
The Filtered Sound Stage	54
The Performance Stage	55
The Training Stage	57
Purpose and Rationale	57

Chapter	Page
Research Expectations	59
II Methodology	64
The Case Study Approach	64
Instrumentation	72
Psycho-Social Personality Measures	74
Selection of Subjects	81
Child #1, Ernest	87
Background Information	87
Criterion Results	88
Child #2, Andrew	90
Background Information	90
Criterion Results	91
Child #3, Brian	92
Background Information	92
Criterion Results	93
Child #4, Charles	95
Background Information	95
Criterion Results	96
Child #5; Darryl	97
Background Information	97
Criterion Results	98
Procedure	99
III Presentation of Results	107
Child # 1, Ernest	109
APP Remedial Program	109
Criterion Results	111
How Significant Others View the Child	114

How the Child Views Himself	123
The Child's Ability to Cope With Frustration ..	129
The Child's Personality Traits and Dynamic Organization	139
Summary of Psycho-Social Results	152
Child #2, Andrew	153
APP Remedial Program	153
Criterion Results	154
How Significant Others View the Child	156
How the Child Views Himself	163
The Child's Ability to Cope with Frustration ..	169
The Child's Personality Traits and Dynamic Organization	179
Summary of Psycho-Social Results	191
Child #3, Brian	192
APP Remedial Program	192
Criterion Results	192
How Significant Others View the Child	195
How the Child Views Himself	202
The Child's Ability to Cope with Frustration ..	207
The Child's Personality Traits and Dynamic Organization	217
Summary of Psycho-Social Results	228
Child #4, Charles	229
APP Remedial Program	229
Criterion Results	231
How Significant Others View the Child	233
How the Child Views Himself	241

Chapter	Page
The Child's Ability to Cope with Frustration ..	246
The Child's Personality Traits and Dynamic Organization	255
Summary of Psycho-Social Results	265
Child #5, Darryl	266
APP Remedial Program	266
Criterion Results	267
How Significant Others View the Child	270
How the Child Views Himself	277
The Child's Ability to Cope with Frustration ..	282
The Child's Personality Traits and Dynamic Organization	287
Summary of Psycho-Social Results	301
Summary of Research Findings	303
How the Child is Seen by Significant Others ...	303
How the Child Views Himself	307
How the Child Handles Frustration-Aggression ...	309
The Child's Personality Organization	310
IV Discussion of Results	314
Research Expectations	314
Theoretical Implications and The Tomatis Technique	330
Strengths and Weaknesses	334
Design and Methodology	334
Instrumentality	335
Academic and Criterion Testing	335
Psycho-Social/Personality Measures	336
The Tomatis APP Remedial Re-education	337

Chapter

Page

V	Summary and Conclusions.....	339
VI	Critical Evaluation:.....	345a
	Bibliography.....	346
	Additional Bibliography.....	375

LIST OF TABLES AND FIGURES

TABLE		PAGE
1	Academic and Criterion Scores for All Five Boys at the Beginning of Baseline	105
2	Testing Schedule for Each Child	106
3	Ernest's Academic Testing Results for Baseline APP, and Followup Periods	112
4	Ernest's Rosenzweig Responses	137
5	Ernest's CPQ Results for the Baseline, APP, Remedial and Follow-up Periods	140
6	Ernest's Rorschach Responses	142
7	Ernest's Developmental Rorschach Rating Scale Scores	143
8	Andrew's Academic Testing Scores for Baseline, APP and Followup Periods	157
9	Andrew's Rosenzweig Responses	174
10	Andrew's CPQ Results for the Baseline, APP Remedial and Followup Periods	181
11	Andrew's Rorschach Responses	187
12	Andrew's Developmental Rorschach Rating Scale Scores	189
13	Brian's Academic Testing Scores for Baseline, APP, and Following Periods	194
14	Brian's Rosenzweig Responses	215
15	Brian's CPQ Results for the Baseline, APP Remedial and Follow-up Periods	218
16	Brian's Rorschach Responses	225
17	Brian's Developmental Rorschach Rating Scale Scores	226
18	Charles' Academic Testing Scores for Baseline, APP and Follow-up Periods	232
19	Charles' Rosenzweig Responses	254
20	Charles' CPQ Results for the Baseline, APP	

Table		Page
	Remedial and Followup Periods	257
21	Charles' Rorschach Responses	263
22	Charles' Developmental Rorschach Rating Scale Scores	264
23	Darryl's Academic Testing Results for Baseline, APP and Follow-up Periods	269
24	Darryl's Rosenzweig Responses	291
25	Darryl's CPQ Results for the Baseline, APP Remedial and Follow-up Periods	293
26	Darryl's Rorschach Responses	298
27	Darryl's Developmental Rorschach Rating Scale Scores	299
 Figure		 Page
F	Visual Trend Analysis	110
A	Tomatis Listening Test: Child #1, Ernest	113
1	Ernest's Adjustment Ratings on the Child Behavior Rating Scale As Measured by his Teacher	115
2	Ernest's Adjustment Ratings on the Child Behavior Rating Scale as Measured by his Parents	117
3	Ernest's Inferred Self Concept As Measured by the Inferred Self Concept Scale	119
4	Ernest's Specific Self Esteem Ratings on the Self Esteem Inventory	124
5	Ernest's Self Esteem Ratings on the Self Esteem Inventory	125
6	Ernest's Self Esteem Ratings on the Self Esteem Inventory	126
7	Ernest's Extrapunitive Rosenzweig Scores	130
8	Ernest's Intropunitive Rosenzweig Scores	131
9	Ernest's Impunitive Rosenzweig Scores	132
10	Ernest's Obstacle-Dominance Rosenzweig Scores ...	134
11	Ernest's Ego-Dominance Rosenzweig Scores	135

Figure		Page
12	Ernest's Need Persistence Rosenzweig Scores	136
13	Ernest's R. R. S. Cognitive Index	145
14	Ernest's R. R. S. Affective Index	146
15	Ernest's R. R. S. Personalization Index	147
B	Tomatis Listening Test, Child #2, Andrew	155
16	Andrew's Adjustment Ratings on the Child Behavior Rating Scale as Measured by his Teacher	159
17	Andrew's Adjustment Ratings on the Child Behavior Rating Scale as Measured by his Parents	160
18	Andrew's Inferred Self Concept as Measured by the Inferred Self Concept Scale	164
19	Andrew's Specific Self Esteem Ratings on the Self Esteem Inventory	165
21	Andrew's Self Esteem Ratings on the Self Esteem Inventory	167
22	Andrew's Self Esteem Ratings on the Self Esteem Inventory	168
23	Andrew's Extrapunitive Rosenzweig Scores	170
24	Andrew's Intropunitive Rosenzweig Scores	171
25	Andrew's Impunitive Rosenzweig Scores	172
26	Andrew's Obstacle Dominance Rosenzweig Scores ...	176
27	Andrew's Ego-Dominance Rosenzweig Scores	177
28	Andrew's Need Persistence Rosenzweig Scores	178
29	Andrew's R. R. S. Cognitive Index	183
30	Andrew's R. R. S. Affective Index	184
31	Andrew's R. R. S. Personalization Index	185
C	Tomatis Listening Test-Child # 3, Brian	193
32.	Brian's Adjustment Ratings on the Child Behavior Ratings as Measured by his Teacher	197
33	Brian's Adjustment Ratings on the Child Behavior	

Figure

Page

	Rating Scale as Measured by his Parents	198
34	Brian's Inferred Self Concept as Mesured by the Inferred Self Concept Scale	200
35	Brian's Specific Self Esteem Ratings on the Self Esteem Inventory	203
36	Brian's Self Esteem Ratings on the Self Esteem Inventory	205
37	Brian's Self Esteem Ratings on the Self Esteem Inventory	206
38	Brian's Extrapunitive Rosenzweig Scores	208
39	Brian's Intropunitive Rosenzweig Scores	209
40	Brian's Impunitive Rosenzweig Scores	210
41	Brian's Obstacle Dominance Rosenzweig Scores	212
42	Brian's Ego dominance Rosenzweig Scores	213
43	Brian's Need Persistence Rosenzweig Scores	214
44	Brian's R. R. S. Cognitive Index	221
45	Brian's R. R. S. Affective Index	222
46	Brian's R. R. S. Personalization Index	223
D	Tomatis Listening Test, Child #4 Charles	230
47	Charles' Adjustment Ratings on the Child Behavior Rating as Measured by his Teacher	234
48	Charles' Adjustment Ratings on the Child Behavior Rating as Measured by his Parents	235
49	Charles' Inferred Self Concept level as Measured by the Inferred Self Concept Scale	237
50	Charles' Specific Self Esteem Ratings on the Self Esteem Inventory	242
51	Charles' Self Esteem Ratings on the Self Esteem Inventory	244
52	Charles' Self Esteem Ratings on the Self Esteem Inventory	245
53	Charles' Extrapunitive Rosenzweig Scores	247

Figure		Page
54	Charles' Intropunitive Rosenzweig Scores	248
55	Charles' Impunitive Rosenzweig Scores	249
56	Charles' Obstacle-Dominance Rosenzweig Scores ...	251
57	Charles' Ego-Dominance Rosenzweig Scores	252
58	Charles' Need Persistence Rosenzweig Scores	253
59	Charles' R. R. S. Cognitive Index	259
60	Charles' R. R. S. Affective Index	260
61	Charles' R. R. S. Personalization Index	261
E	Tomatis Listening Test Child #5 Darryl	268
62	Darryl's Adjustment Ratings on the Child Behavior Rating Scale as measured by his Teacher	271
63	Darryl's Adjustment Ratings on the Child Behavior Rating Scale as Measured by Residential Staff	272
64	Darryl's Inferred Self Concept As Measured by the Inferred Self Concept Scale	274
65	Darryl's Specific Self Esteem Ratings on the Self Esteem Inventory	278
66	Darryl's Self Esteem Ratings on the Self Esteem Inventory	280
67	Darryl's Self Esteem Ratings on the Self Esteem Inventory	281
68	Darryl's Extrapunitive Rosenzweig Scores	283
69	Darryl's Intropunitive Rosenzweig Scores	285
70	Darryl's Impunitive Rosenzweig Scores	286
71	Darryl's Obstacle-Dominance Rosenzweig Scores ...	288
72	Darryl's Ego-Dominance Rosenzweig Scores	289
73	Darryl's Need Persistence Rosenzweig Scores	290
74	Darryl's R. R. S. Cognitive Index	294
75	Darryl's R. R. S. Affective Index	295
76	Darryl's R. R. S. Personalization Index	296

Over the past 25 years, dyslexia and its remediation have become a major issue confronting educators and psychologists. It has been estimated that between 10% and 15% of the school population suffers from some form of reading handicap. Within the United States alone, dyslexia is the major variable in over 700,000 annual school dropouts (Brown, 1979). Delacato (1970) estimated that half of the unemployed young adults between the ages of 16 and 21 are functionally illiterate.

Reading failure no longer can be viewed as strictly academic in nature. Factors such as genetic predisposition, chemical imbalance, central nervous system dysfunction, and problems of psychogenic origin have been cited as causative agents. This has caused both clinicians and researchers to abandon the notion of a single syndrome, and instead to devote their attention to differential diagnostic strategies.

Regardless of the etiology of dyslexia, the affective problems coexisting with the reading disability cause great concern to those attempting to remediate the academic symptoms. The list of behavioral characteristics that accompany the dysfunction in dyslexic children has led some to the conclusion that the emotional and cognitive elements of the problem are too closely tied for precise differentiation.

The in-depth study of the psycho-social/personality makeup of the dyslexic child began in the late 1930's. Gates (1941) estimated from his clinical work that 75% of reading disabled children have some form of emotional disturbance and/or personality problems. Other psychoanalytic clinicians of the time emphasized the neurotic

character of the dyslexic student (Blanchard, 1935, 1936; Pearson & English, 1937; Sylvester & Kunst, 1943; Tulcher, 1935). More recently, the implicit relationship between dyslexia and affective variables has been studied using larger groups of children (Bryan, 1974; Kronick, 1976; Lerner, 1976). Numerous attempts have been made to isolate accompanying symptomatology. Results have been varied and contradictory, leading authors to conclude that no single personality syndrome exists (Glenn, 1975; Schroeder, 1965; Stott, 1971).

This thesis proposes to examine the relationship between specific affective variables and the remedial process in dyslexic children.

The remedial approach selected is that suggested by A. Tomatis (1978). This approach to the remediation of dyslexia begins with the assumption that reading is part of the broader category of human communication. Tomatis states that dyslexia is a developmental disorder, which is inherently tied to an affective component. Tomatis asserts that the remedial process must focus on changing the psychoneurological organization, as well as shifting the affective components of the child's personality. Placing great emphasis on language and auditory training, Tomatis (1978) claims that specific remedial use of sound and music can reverse the reading dysfunction.

Studying personality variables and remedial change in the child presents many problems to the researcher. Many diagnostic tools used by educators and psychologists have fallen under criticism for their subjective nature. Researchers generally have agreed that personality is not a static phenomenon. Rather, it is changeable in

nature, and unable to be removed from the physical and social milieu in which one lives. When studying change within a person's emotional makeup, we are forced to explain areas which do not lend themselves to precise quantitative determination. It is due to the uniqueness of the individual and the novel interaction between the environment and each child's psychological makeup that an intensive single case study approach was chosen for this particular research study. This type of in-depth study allows the researcher to focus on certain psychosocial/personality variables and their relationship to the remedial process.

The concept of personality closest to the theoretical design of this thesis is that of Allport (1937). He states that "...personality is the dynamic organization within the individual that determines his characteristic behavior and thought" (p.28). The two most important aspects of Allport's definition are the concept of "dynamic" and the implication of uniqueness. To study the interaction of the remedial process and the dynamic organization, the child must be studied over the course of that process. The uniqueness of the child lends itself to a case study approach.

This present study involved five dyslexic children, each of whom participated in a ten month APP remedial program, including a two month baseline and a two month post intervention period. During this time, (14 months) certain variables in the child's psychosocial personality organization were measured concurrent with his academic progress.

CHAPTER I

REVIEW OF LITERATURE

Because existing literature on dyslexia reveals much confusion about the definition of this concept, the first section of this chapter reviews competing definitions. The following section proposes a composite definition based on widely used constructs of dyslexia and learning disabilities.

Increasingly, dyslexia and learning disabilities are being tied in research to language development. The third section in this review focuses on the interrelations among language development, personality organization and reading skill. Theoretical orientations toward reading development are discussed in the fourth section. This is followed by an introductory section devoted to Tomatis' theoretical orientation towards dyslexia. The purpose of this fifth section is to examine how Tomatis' theoretical position ties together language development, personality organization and dyslexia; with the aim of providing a rationale for the study of personality and psycho-social variables within the dyslexic child.

This thesis examines the relationship between certain psycho-social/personality variables and the remedial process. The sixth section examines the empirical literature dealing with the behavioral and personality characteristics which have been identified in dyslexic children. Three specific areas are investigated: social perception and interpersonal skill, self-concept, and frustration-aggression.

As previously mentioned in the introduction, the limited success of remedial techniques have underlined the difficulty in

working with the dyslexic child. The seventh section of this review will briefly survey contemporary remedial efforts, with emphasis placed on the short and long term outcomes. Because the APP approach to the remediation of dyslexia is being employed in this dissertation, the eighth section will focus on its process.

Finally, the purpose and rationale section will serve as an integration and summary statement. It will bring together both empirical and theoretical constructs, leading to the research expectations of this dissertation.

Concepts of Dyslexia

There has arisen an exorbitant number of terms used to describe children and reading problems, creating confusion in diagnosis. In his review of the literature, Kasdon (1961) found that 43 different terms have been utilized for diagnostic purposes. The same observation was made more recently by Cruickshank (1972). It is imperative for this thesis to examine past definitions and reach agreement on terms.

The term dyslexia arose from the Greek suffix lexis, which means a word or phrase. Its medical counterpart is that of incomplete alexia. Alexia is the Greek term for word blindness, or the loss of the ability to understand the meaning of written sentences or words (Steadman's Medical Dictionary, 1976).

As dyslexia is used today, it refers to a conglomeration of earlier terms which have evolved separately under its heading. The term was first used in the early 1900's by Berlin and Buns (Tomatis 1969, 1972) in reference to a specific anomaly dealing with people who had lost the capacity to read.

Within the period 1900-1917, the meaning of the term dyslexia switched from a specific reading-related disability to a more generic term with broader implications. As the term dyslexia evolved, it eventually incorporated such early terms as alexia (Hinshelwood, 1917), legasthenia and word amblyopia (Clairborne, 1906), analphabitis partialis (Engler, 1917) and brodylexia (Claparide, 1916).

The specific term dyslexia was reintroduced by Hinshelwood, an English physician, in 1917. Hinshelwood was studying the phenomena of word blindness in children. He concluded from his work that, because of the existing symptomatology, dyslexia was due to a disorder in the visual areas of the brain.

During the period from 1935 to 1955, the emphasis of professionals working with dyslexia focused on the psychogenic aspects of the disturbance (Harris & Sipay, 1975). Psychoanalytic clinicians presented numerous case studies seeking to demonstrate the neurotic nature of the reading dysfunction. (Bell, 1945; Blanchard, 1935, 1936; A. Freud, 1954; Jackson, 1944; Sylvester & Kunst, 1943). Pearson and English (1937) enumerated four emotionally based etiological situations that they believed to be at the basis of the reading disability:

1. Unpleasant and painful early reading experience.
2. Rebellion of a child against parental wishes.
3. Inhibition of the child from exploration, with superego banning all knowledge through sight.
4. Symbolic representation of anal-sadistic fantasies through letters and words, with their subsequent repression.

The 1960's saw a tremendous expansion of the literature available on dyslexia and reading disability. During this period, there surfaced two distinct approaches toward the dysfunction; the medical and the educational orientations. The medical focused on a neuropsychological etiology of the problem, often associated with perceptual-motor, laterality, and communication problems. The educational orientation emphasized a more pluristic approach, including sensory, emotional, linguistic, sociological and academic deficiencies. These differences in both approach and etiology arose in part from the historical tendencies of the varying disciplines, and led contemporary researchers and professionals to qualify their use of the term dyslexia (i.e., primary reading retardation: Rabinovitch, 1962; specific developmental dyslexia: Critchley, 1964; specific dyslexia: Klasen, 1972).

Fundamental to understanding how a specific author views the dyslexic child are the varied etiological foundations postulated as underlying it. The etiology of dyslexia has been theorized along three diverse lines: (a) Constitutional origin; (b) Congenital dyslexia; and (c) Psychoneurotic dyslexia. In the research to date, unless the authors make specific reference to the contrary, dyslexia tends to be rather narrowly viewed as a reading problem with an etiology suggestive of some degree of neurological dysfunction (Manjo & Duffelmeyer, 1975). Although the list of people supporting this view is lengthy, (Bryant, 1963; Clemmens, 1961; Connolly, 1968; Johnson & Myklebust, 1937; Money, 1966; Wood, 1959), educational sources remain critical of this approach. Most of this criticism is directed against the lack of precision in

measurement and lack of specificity in diagnosis. Vernon (1957) has lamented the lack of any clear cut evidence for an organic condition underlying the reading failure. Harris (1961), in support of Vernon, maintains that by present diagnostic standards only a very small proportion of children with reading problems can be classified as having neurological deficits. In reviewing the existing literature, Lerner (1969) has stated that, with over 20,000 reported studies, there is no clear evidence for neurological etiology as the sole agent in dyslexia.

In discussing the methodological problem in studying the link between neurological dysfunction and learning problems, Wong (1979) stated: "This theory is immune to disproof; it does not lend itself to any conclusive experimentation and it depends on measures of unknown or questionable validity" (p.26).

Because of the pervasive nature of the problem in today's society, dyslexia has been re-interpreted by educators. Emphasis has shifted away from etiologically based definitions, and has been refocused on behavioral symptomatology and remediation. McLeod (1966) speaks of dyslexia as a breakdown in psycho-linguistic functioning. For him, the problem centers around a communication disorder. Representative of the educational definition of reading retardation or dyslexia is that put forward by Spache (1976). For him, a child must fit five separate categories to be considered retarded in reading:

1. The child must be behind in a number of reading skills.
2. In primary grades the child must be behind in his reading skills by at least one year.
3. The child is below the level of his grade, age, or socio-economic group such that he cannot fully participate in reading tasks.

4. The child must have had the normal opportunity for schooling.
5. The child remains behind his peers despite corrective efforts on the school's part.

Because of the varying definitions of dyslexia and the accepted heterogeneity of the makeup of dyslexic children (Myers & Hammill, 1976; Wallace & McLoughlin, 1975), a number of authors have proposed classification systems wherein etiological qualifiers are used to clarify the term. Bannatyne (1971) has suggested four nosological types of dyslexia:

1. **Primary Emotional Communicative Dyslexia:** This type is postulated to have its roots in the poor communicative relationship between the child and mother during the period of language development. More specifically, Bannatyne places emphasis on the importance of language development in developing reading and communication skill. He goes into some depth, explaining how the "innate program" for language acquisition can become distorted by emotionally based difficulties in the child's environment.
2. **Genetic Dyslexia:** This type indicates the child was born with a limited potential to learn language.
3. **Minimal Neurological Dysfunction Dyslexia:** This type is caused by brain injury or neurological disorganization.
4. **Social, Cultural or Educational Deprivation Dyslexia:** This type originates because of a lack of exposure either in the home, school or neighborhood where the child grows up.

One of the major limitations of many theoretical approaches to the diagnosis and remediation of dyslexia is the uni-dimensional approach to etiology. Even though contemporary theorizing has taken a more heuristic stance, the uni-dimensional trend is still in

evidence. The theories of Satz and Nostrand, 1973 (ontogenetic delay in conceptual linguistic skill), Vellutino, 1977 (a verbal deficit) and Wallach & Goldsmith, 1977 (an auditory processing deficit), Ross, 1976 (developmental delay in attention), Frostig, 1965; Kephart, 1971 (perceptual deficit position), all are open to this limitation.

A more holistic oriented stance has been put forward by Torgesen (1977). He presents a theory which hypothesizes that children who have difficulty learning are both inactive cognitively and immature in their socialization skills. From his point of view these children cannot realistically assess themselves in relation to their strengths and weaknesses (socially and academically).

As previously mentioned, the multidimensional basis of dyslexia is today generally accepted throughout most of the literature. In a recent psychodiagnostic study by Satyan (1980), 250 dyslexic children who had been seen at a reading clinic between 1971 and 1976, were reviewed. Results of this study point out the multidimensionality of dyslexia.

1. Sex distribution: Boys comprised 71.6% of the children seen, over the five year time period. The literature is in general agreement with this finding suggesting that dyslexia is more common in boys (Critchley, 1964; Rutter & Yule, 1975).
2. Language difficulties: Satyan found 49% of the children delayed in speech and language development and 23% exhibited difficulty in pronunciation. Although, the percentages vary with study and population, it is generally accepted that speech and language

problems play a major role in reading disability (Bannatyne, 1971; Jansky & DeHirsch, 1972; Rutter & Yule, 1975).

3. Social-emotional problems: Satyan's study identified 27% of the children as having social-emotional problems. Although this figure is low in comparison with other research findings (Ekwall, 1976; Koppitz, 1971), the existence of social-emotional difficulty is well accepted. In a five year follow-up study of 177 children with learning problems (ages 6-12) by Koppitz (1971), teachers identified a wide range of behavioral problems that accompany the dysfunction in these children: 91% exhibited restlessness and hyperactivity, 54% had low frustration thresholds, 43% were explosive, 42% showed overt signs of high anxiety, 38% were deemed withdrawn and 33% were overly aggressive.

4. Visual problems: Satyan's research identified 54% of the children as having some visual difficulty (i.e., poor convergence, diplopia, slow stereopsis, visual fatigue and squinting). The presence of visual and visual-perceptual difficulty in the dyslexic child has been given great emphasis in the literature (Benton, 1962; Gibson, 1966; Lovell, 1964), to the point where some researchers have conveyed concern over the exclusion of other factors (Critchly, 1970; Wolf, 1969). Even so, the importance of vision and visual perception to reading cannot be ignored.

5. Auditory difficulty: Satyan found 21% of the children exhibited some hearing loss. Although most of the literature has focused on the role of auditory perception and dyslexia (Lyon, 1977) rather than sensorial loss; with increasing importance being shown toward the role of language development and dyslexia, the auditory sense is

receiving more attention in the literature. Areas of recognized importance are: auditory discrimination (Bland, 1970; Oakland, 1969; Price, 1973), auditory closure (Golden & Steiner, 1969), sound blending (MacGinitie, 1967) and auditory memory (Dornbush & Basow, 1970; Golden & Steiner, 1969).

6. Mixed laterality: Satyan found no evidence for mixed laterality as a major symptom of dyslexia (only 2% of the children in the study exhibited confused distal laterality). The question of laterality of cerebral functioning and its importance in dyslexia has been argued at length in the literature (Sabatino & Becker, 1971; Tinker, 1965; Trieschman, 1968) with no conclusions reached. Satyan's study is a good example of the controversy. His indicator of cerebral dominance was handedness, ignoring the 23% of the children in his study with mixed visual dominance and the 22% of children with bilateral auditory preference.

Because of the difficulty heterogeneity has caused in both diagnosis and remediation, Eisenberg (1979) suggests that definition should center around the performance deficit rather than the complicating symptomatology. He also recommends that one should not assume the universality of clinical features, but be prepared to tailor remedial efforts to fit diagnosed deficiencies and handicaps.

Before evaluating the term learning disabilities, the reader must be made aware of a certain ambiguity. It is not uncommon to see the terms dyslexia and learning disabilities used interchangeably. However, some authors have implied that dyslexia is a specific type of learning disability, one which implicates the reading process.

The term Learning Disability originated with S. Kirk in 1963. It referred to children who do not have a general intellectual deficit, but who show an inability to learn and/or adjust at school.

In 1964, Clements headed a task force appointed by the National Society for Crippled Children and Adults, Inc., and the National Institute of Neurological Diseases and Blindness. One of the main goals of the group was to deal with the issue of terminology in the field of learning disabilities. It was concluded that the term "minimal brain dysfunction" was most appropriate when referring to children of average intelligence with learning or behavior problems which were the direct result of central nervous system disorder. The group concluded that under the term minimal brain dysfunction should be those children previously diagnosed as: organic brain dysfunction, minimal brain damage, minimal brain injury, minimal cerebral damage, hyperkinetic syndrome, dyslexia, perceptually handicapped, specific reading disability, aphasoid syndrome and learning disability (Clements, 1966). At the time, the results of this task force were applauded as a step forward in clarification of terminology. One of the reasons for the diffuse nature of the definition was the broad symptomatology that had been identified for the learning disabled child, reminiscent of the same problem in clarifying the term dyslexia. Clements (1973) listed the ten most often cited characteristics as follows: hyperactivity, perceptual motor impairments, emotional lability, general coordination deficits, disorders of attention, impulsivity, disorders of memory and thought, specific learning disabilities (i.e., reading, arithmetic, writing, and spelling), disorders of speech and hearing,

and equivocal neurological signs and electroencephalographic irregularities. Given these diverse behavioral and cognitive traits, it is small wonder that researchers and clinicians have had such difficulty both in discerning an accurate unidimensional diagnostic label or discovering a unidimensional etiological basis.

The issue of diagnosis was further confused with the passage of the Children with Specific Learning Disabilities Act by the United States Congress in 1969. The definition they used stated:

Children with special learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written languages. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic.

They include such conditions which have been referred to as perceptual handicaps, brain injuries, minimal brain dysfunction, dyslexia, developmental aphasia, etc. (First Annual report of the National Advisory Committee on Handicapped Children, Jan. 31, 1968.)

Nowhere in the report are "the basic psychological processes" either described or elaborated on. One can infer that the concept of learning disabilities was quickly becoming a broader catch-all term than its predecessor dyslexia.

With regard to definition, Gearhart (1973) put together four broad generalizations which seem to tie together most of those presently in usage:

1. Most definitions are based on a discrepancy between expected potential and current functioning level.
2. Most definitions exclude other existing categorizations that are used to classify special education students (i.e., mental retardation, emotional disturbance.)
3. The culturally disadvantaged student is excluded in most definitions.
4. Some form of central nervous system dysfunction is usually assumed.

In summary then, one of the major problems in studying the dyslexic child is dealing with varied and confusing terminology.

The term dyslexia, over the years of its usage, has become a catch-all term with unclear etiological base and varying symptomatology. The introduction of the term learning disability appears to have added to the confusion, leaving the issue unclear at best. What is clear, is that the number of children experiencing some form of reading difficulty remains a major problem area in both education and psychology. For this dissertation, learning disability will be considered the "umbrella" term that is used in reference to a number of specific disabilities, dyslexia being the most prominent.

Because of the many diagnostic and treatment issues which have become clouded due to the lack of definitional precision regarding the concept of dyslexia, this thesis must formulate some form of composite definition.

Dyslexia: A Composite Definition

As has been demonstrated, there is more controversy surrounding both the definition and application of the term dyslexia than there is agreement. For this dissertation, then, it was decided to incorporate a number of widely substantiated positions, into a composite definition.

The first definition to be included is that of Samuel Kirk. Since his initial use of the term learning disabilities in 1963, his formal outlook has been somewhat refined. In a presentation at the First National Conference on Learning Disabilities, Kirk (1977) offered a comprehensive definition stressing three main points: discrepancy criterion; exclusion criterion and special education criterion. His three-pronged definition makes the following points. A learning disability is a psychological or neurological impairment

of perceptual or communicative behavior which (a) requires instructional help over that which is normally obtained in a regular class (special education criteria); (b) is not primarily the result of mental retardation, sensory handicaps, severe emotional problems, or lack of an opportunity to learn (exclusion criteria); and (c) is manifested in discrepancies among specific behaviors or between overall performances and academic achievement (discrepancy criterion). This approach incorporates many of the points which were referred to earlier by Spache (1976).

The second definition utilized is that of Rabinovitch (1962, 1968). Unlike Kirk, Rabinovitch is more specific in his call for differential diagnosis. In his clinical work, Rabinovitch identified three major groupings of reading retardation; primary, secondary endogenous and secondary exogenous. In secondary endogenous reading retardation, the child's reading ability is impaired by clear cut neurological damage. In secondary reading retardation with an exogenous causative factor, the child's ability to read is obstructed by either severe emotional disturbance or cultural deprivation. This thesis is concerned with what Rabinovitch termed primary reading retardation or developmental dyslexia:

The deficit is in the ability to deal with letters and words as symbols, with resultant diminished ability to integrate the meaningfulness of written material. The problem appears to reflect a basic disturbed pattern of neurological organization (Rabinovitch, 1962, p.74).

Rabinovitch goes on to present a more functional description of the issue. Coupled with the reading problem, the child exhibits varying associated deficits: As previously mentioned, Rabinovitch

notes a difficulty in these children in using sounds as symbols and in associating "conceptual meaningfulness" to sounds and their letter symbols. Underlying this are language deficits, articulation problems and primitive syntax.

Eisenberg's (1966) definition is the third conceptualization to be employed in this dissertation. It acts as a summary of the previous two positions and is frequently quoted. It can be stated as follows:

Specific reading disability may be defined as the failure to learn to read with normal proficiency, despite conventional instruction, a culturally adequate home, proper motivation, intact senses, normal intelligence, and freedom from gross neurological deficit (Eisenberg, 1966, p.360).

The fourth definition being utilized is based upon a set of pertinent empirical facts that were brought forth by Michael Rutter and William Yule (1975) while elaborating their concept of specific reading retardation. They present the argument, similar to that of Rabinovitch, that there is a definite distinction between reading backwardness and specific reading retardation. The first major difference they stress is that of potential. The specific reading retardation group they characterize as underachievers; while the backward readers have low achievement, but make better use of their ability. Rutter and Yule go on to make the following points:

1. Sex Distribution: The specific reading retardation group has a higher percentage of boys (76.7% vs. 54.4%).
2. Overt Neurological Evidence: The reading backward group showed 11.4% of children with overt organic brain disorder, whereas the specific reading retardation group did not show any children with such disorders.

3. Language Development: Both groups had high percentages of children with slow language development. The reading backward group showed 39.8% of children speaking their first phrase after 24 months. This statistic is worth noting because of its implication for diagnosis.

4. Socioeconomic Status: Results indicate that the reading disability does not appear to respect economic barriers.

Probably as important as any of the above points that Rutter and Yule make is their feeling that it is virtually impossible to separate genetic and environmental influences to determine the major causative factor in reading failure.

To summarize, then, dyslexia in this dissertation will be defined as a learning disability; the primary symptomatology being the child's inability to read at a level consistent with expected potential. The following empirical guidelines will constitute the operational definition:

1. The disability in reading must be so severe that the regular classroom is not a sufficient educational placement for the child. the most agreed upon criterion is that the child be between 1.6 and 2 years behind in reading skill.
2. A discrepancy must exist between the child's potential and his actual achievement. For this evaluation, Myklebust's learning quotient will be used.
3. Etiologically, the dyslexia must not be primarily the result of mental retardation, sensory handicap, severe emotional problems or a lack of opportunity for formal learning.

4. Children with gross neurological signs will be ruled out.
5. Dyslexia is viewed as resulting from a combination of both environmental and organic factors.

Many of the most prominent theorists who have studied both dyslexic and learning disabled children have stressed the importance of language in the development of cognitive and social skill. While the emphasis of this thesis is on the psycho-social/personality aspects of dyslexia, the importance of language development and its concomitant affective components cannot be ignored. The following section is presented for two reasons: first, because of the increasing empirical evidence linking language, reading and personality. Second, the remedial technique utilized has as one of its tenets, that language and auditory training will increase reading ability and further alter psycho-social/personality status. For these purposes, the developmental link between language, reading ability and personality must be verified.

The Development of Language and its Relationship to Reading

As was mentioned earlier, much of the diagnostic work with dyslexic children has implicated language development and deficiencies in the reading dysfunction. Satyan (1980) and Rutter and Yule (1975) have found delayed speech and language development in dyslexics. Other researchers have stressed phonological deficiencies (Downing, 1973; Mattingly, 1972); the inability of dyslexic children to efficiently employ verbal mediators to encode, decode and store information (Blank et al., 1968; Paris & Carter, 1973; Perfetti and Hogaboam, 1973); and generally less sophisticated syntactic and linguistic abstractions (Fry et al., 1970). Mattingly

(1972) has emphasized the dependence of reading on language to the point of calling reading "parasitical" on language.

Reading and speech are both elements of human communication. Whereas in spoken language the communicated message is mediated by sound, in reading the agent is the written symbol. Both reading and speech are adaptive mechanisms for the human organism. Every species utilizes some form of sign communication for adaptive purpose, but only the human organism has the innate ability to utilize language as a function of abstract thought toward a social-communicative end. Language serves to both organize and give concrete articulation to thought processes, thereby creating consciousness itself (Luria, 1973). In terms of its operative functions, language is not purely sensorimotor in nature, but is the verbalized expression of the experiential repertoire of the individual. It not only allows the individual to represent his experience in the course of his ontological development, but permits one conceptual expansion through abstraction, generalization, and thought. Luria (1973) sees language as the vehicle by which the human being becomes a conscious, volitional, self-regulated, social being.

In a developmental context, both the articulatory and morphological aspects of language development have been extensively studied (Berko, 1958; McCarthy, 1954; Reed, 1966; Ruddell & Graves, 1967). But the primary motivational element, the affective nature of its origins has, at times, been neglected.

To understand the importance of affect in language development, one must briefly discuss the psychic events that mark the precursors

of language. Margaret Mahler's (1968, 1975) work on the psychic development of the human infant through the separation-individuation process is of significance here. She describes how the first two years of the child's life mold his adaptive mechanisms and shape his identity process. According to Mahler's research, the psychological birth of the human child is grounded in the mother-child dyad.

The human newborn is totally dependent on the ministrations of others for survival. This period in the newborn's life, (around two months) has been termed the preobject stage (Spitz, 1965) or the symbiotic stage (Mahler, 1968, 1975). It is characterized by a state of undifferentiation, of a fusion with the symbiotic partner, the mother. At this point, communication between mother and child is rooted in primordial need satisfaction. The child's primitive ego is supported by the empathic rapport of the host in the dyad. Maternal language plays a key role in this pre-identification process (Werner, 1963). The child responds to the mother's affect which is communicated not only via kinesthetic and visual perceptions but through auditory stimulation as well. The infant associates the mother's verbalizations with interoceptive experiences, investing affect in them, and responding with cooing, mouthing and eventually a smile (Spitz, 1965).

For Mahler and other ego psychologists, the child then begins the gradual processes of separation from this psychosocial symbiotic dyad. It is during this stage of weaning/disengagement from the mother that differentiation of the ego apparatus and the commencement of intrapsychic autonomy begins. Children begin to acknowledge distantiation (i.e., become conscious of himself),

especially during the times they are alone. They realize that not only can they emit sounds, but that they can repeat them. In normal development children are reinforced by the adult for imitating maternal sounds, helping them to practice their vocalizations and endowing these sound with power. They can then use their vocal signs to call the mother to satisfy their needs.

Throughout the individuation process (18-36 months), the rudimentary sense of self is strengthening: the child is busy exploring the world of objects and orienting itself in space. This, in essence, marks the beginnings of the cognitive aspect of language. Affectively and socially rooted phonemes begin the transformation to their objective counterpart, the morpheme. The achievement of such a vital step presupposes that the child perceives himself in interaction with others. Werner (1963) refers to this as a gradual distancing process; the primordial symbiotic relationship is now giving rise to a distantiation between symbolizer (the mother) and symbol (the word). The key to this process is the transformation of the idiomorphic speech patterns (baby language) into conventional speech patterning (Tomatis, 1973; Werner, 1963). Through the internalization of experience via language development, there is an affective shift in function, from things of action to objects of contemplation (Werner, 1963). The desire to communicate is aroused by the mediating tool—the word.

By the time children reach this period (three years and upward) they have amassed an enormous amount of experience and internalized both the words and action patterns of their parents. They must organize sequences in time and the relationships of things to each

other. Children experientially discover the grammatical transformations of their language which give shape and form to the realities through which they have lived. First children acquire causality relationships which enable them to fit their experiences into a causal framework. Vygotsky (1962) points out that speech develops in two interdependent and correlative directions; toward communication with the self through inner speech and through communication with others (i.e., external speech). For Vygotsky, egocentric speech undergoes a gradual transformation to inner speech through the socialization process. Werner (1963) states:

When a child learns to articulate speech in order to communicate to others he also learns to communicate to himself. Because of his social nature, a person's inner life must be fundamentally linked to socially organized activities (p.327).

On a neurological level, Luria (1966) places great emphasis on the emergence of the frontal lobes at this time in development (4-6 years). He maintains that they play an integrative role in both linking experiential meaning to language and in organizing, regulating and directing behavior. This structural integration underlies the motivation for the communication process. Lewis (1963) views directed speech as the beginnings of the child's identity, since it serves to both differentiate himself from his environment and to clarify his interrelationships within it.

In summary, then; successful spoken language requires both a cognitive skill component and a motivational one. The desire to speak and communicate is rooted in the social identification process of the young child and reflects his emotional attitude towards his interpersonal world. Although the question of an innate ability for language acquisition is still under debate, this thesis assumes that

it is developed and cultivated by exposure, motivation and experiences; in short, that it is a social phenomenon (Luria, 1959; Tomatis, 1973; Vygotsky, 1962; Werner, 1963).

The written sign in a phonetically based language system (versus a symbolic code, i.e., Old Hebrew, Japanese) has little relation to objective reality. It is, after all, a valueless graphic design (Tomatis, 1972). As with the phoneme these arbitrary signs must gain meaning for the child, i.e., they must at some point become cathected with symbolic value.

Reading can be conceptualized as visual language decoding. Written words are secondary (visual) symbols which in fact represent primary (auditory) ones (Bannatyne, 1971). It has been suggested that the delayed language skill is the developmental precursor of dyslexia (Myklebust & Johnson, 1962). Spreen (1980) has suggested that language is the cornerstone of reading, and that a synthetic psycho-neuro-linguistic approach needs to be applied.

As will be seen, Tomatis places major emphasis on the interrelationship between language development, personality, and reading. This chapter has placed language and personality in an ontogenic frame. The reading process itself must now be tied to both these structures.

Theoretical Approaches to Reading

The theoretical approaches to reading take many diverse angles. The following section presents two general orientations which provide theoretical support to the position taken in this dissertation.

Perceptual-Cognitive Approaches

The theoretical hypothesis of the importance of language and personality development in reading skill has had support in recent literature. E. Gibson (1972) in approaching reading from a perceptual-cognitive framework elaborates on the hierarchical nature of the abstraction process in language. In doing so, she developmentally traces the perceptual filtering of incoming stimuli that lead the child toward successful monitoring of his phonological system. Gibson's major conclusion is that the motivation behind learning is the reduction of uncertainty for the organism in dealing with its environment. The creation of economical strategies for adapting to its milieu depends heavily on the organism's active exploration and the tuning of the proprioceptive sense organs to that task. These underlying processes are essential for the stimulus filtering that eventually leads to linguistic and cognitive abstraction: For Gibson, words are merely the learned symbols for ideas and events that the child has lived through, and thereby the child's approach to them is ultimately a reflection of his approach to his surrounding environment. In agreement with this theoretical design, Mattingly (1972) views reading as "a deliberately acquired language based skill dependent upon the awareness of aspects of primary linguistic activity. The written text initiates the synthetic linguistic process common to reading and speech" (p.145). In this context, Mattingly is making a clear inferential statement; that the reading process evolves from and is in fact an appendage of language and communicative skill. The idea that the reading process initiates the same active analysis as language (or more specifically

listening) is supported elsewhere (Fries, 1962; Goodman, 1970; Hochberg & Brooks, 1970).

In their presentation of a communication model of reading development, Ruddell & Bacon (1972) place the emphasis of the acquisition of reading skill on the motivation underlying the cognition in a manner similar to Gibson. In their view, this motivation is created by the value that the individual places on events and ideas in his life. Cognitive theorists (Gardner, 1964; Kagan, 1963; Witkin, 1962) accentuate the idea that pre-primary grade children already exhibit individualized strategies for coping with both external demands and internal personality needs. Cognitive style is thereby related to individual perceptual orderings of the environment and is highly dependent on an individual's sense of worth.

An overall conclusion of the above stated positions places the success of the reading process squarely on the developing cognitive, linguistic and motivational substructures that underlie it.

Psychoanalytical and Ego Psychology Approaches

More traditional psychoanalytic theory began formally looking at children with reading disability in the late 1920's and 1930's. Freud (1961) raised the issue of resultant personality problems when the instinctual needs of the developing child are over-indulged. He maintained that a child unwilling/unmotivated to put forth any effort to overcome obstacles will have difficulty in both mastering the written symbols of language and in the learning process in general. According to Anna Freud (1936), dyslexic children, because of either painful tension from within or threat of loss of love from

without, must renounce autonomous ego functioning in order to have the necessary psychic energy for repression of the painful/traumatic situation with which they are dealing. This constant interplay leaves the ego devoid of the energy needed to undertake the learning process itself.

Contemporary ego psychologists view the learning problems experienced by children as evolving from a need to avoid conflicts with both aggressive and erotic instincts. Hall (1956) presents various case studies in support of this view. He found that it is not unusual to find that the mothers of reading disabled children restrict their child's growth by stunting their needs to achieve and explore. He postulated that this results in learning-inhibited children, afraid to exhibit the aggressive curiosity needed for reading. Hall's findings are supported by earlier work done by Sperry and his co-workers (Sperry et al., 1958). In presenting their findings on case studies of seven male children with learning problems, they found that in all seven families, there was a denial of external disturbing events. The mothers, in trying to shield their children from outside pressures, overprotected them. This tendency led to feeling of insecurity in the children, and an inability to adapt appropriately to social situations.

Many ego theorists have expressed similar orientations with regard to the importance of psychosocial/personality organization in the etiology of dyslexia. For example, in a study utilizing an Ericksonian framework, Athey (1966) isolated four key factors among 160 ninth grade students who were having reading problems. Factor I was termed the autonomy syndrome. Poor readers considered

themselves more dependent on their parents than good readers. Interestingly, these readers expressed a desire to maintain the status quo. They spent a large portion of their free time around the house, and made concerted efforts to please their mothers. Factor II related to poor readers' self esteem. Their low opinion of themselves was felt both with respect to school and social accomplishments. Factor III pointed to the fact that poor readers found school to be socially unrewarding. The things they disliked about school revolved around their feelings of frustration and failure (i.e., being laughed at). Factor IV in the Athey study is directly related to the poor readers' lack of individuation. This factor stressed their strong family orientation. Poor readers were found to depend on their parents heavily for companionship rather than on their peer group. In relating her results to an Ericksonian framework, Athey concluded that proficient readers must have successfully mastered and resolved Erickson's first three stages of personality development (i.e., trust, autonomy and initiative.) In a further extension of her approach, Athey collaborated with J. A. Holmes (1967). Holmes (1957, 1959, 1960) stressed that affect must accompany all input of information. He points out that, beginning in the first days of extrauterine life, the infant is gaining pre-verbal feelings of his own worth or lack of it. These primitive "sense beliefs" are neurologically engrammed in the subconscious of the individual. These mobilizers—i.e., the attitudes connoted by these beliefs, as Holmes terms them—account for the individual's approach and attitude to learning and determines whether accomplishments will be tempered by satisfaction

or generalized anxiety. Mobilizers expand through affective internalization and form the foundation of our subsequent value system. As with the theorizing of Erickson (1950), Holmes places emphasis on the ability of the child throughout ontogenesis to deal with his progressive autonomy in a realistic manner.

From these theoretical postulates and corroborative research findings, it can be surmised that for the educator and psychologist, the theoretical orientation that he expounds crucially directs his therapeutic interventions. If one incorporates the perceptual-cognitive approach with the analytic, a holistic theoretical underpinning for dyslexia emerges. In this marriage of theoretical positions dyslexia is viewed as a multidimensional dysfunction, the seeds of which are intermeshed within the developing child before he encounters the written word per se. Language developments are viewed as fundamental, along with neurological maturation, in acquiring reading skill. One of the major reasons Tomatis' theorizing is presented separately and not incorporated into the previous section, is that his approach serves as an integrative point, bringing together language, listening, communication, psychoneurology and personality development as they pertain to the dyslexic child. His holistic approach underlies his remedial approach (audio-psycho-phonology).

Tomatis' Approach to the Development of Language, Reading and Dyslexia

Theoretical Foundations

Not unlike other contemporary scientists trying to unravel the puzzle of the dyslexic child, Tomatis (1978) views the problems

inherent in dyslexia as multidetermined and as originating before the child encounters the written sign or begins to attach verbal meaning to the written symbol. Tomatis conceptualizes the human organism as fundamentally social in nature with an inherent desire to project itself outward, gaining some form of influence over and understanding of the environment. He accepts the humanistic tenet that our main goal in life is self fulfillment; that there is within people the need to expand horizons; to understand our world and how we react within it. To achieve this goal of progressive hierarchical individuation, he maintains that we must effectively communicate both with ourselves and with our environment. This occurs both orally and through written symbols.

Tomatis (1978) begins his thesis by stating that dyslexia is a problem of the ear. This is not difficult to understand if one begins with his premise that the communication process is a key factor in the reading disability. Ontogenetically, Tomatis (1976) traces the various functions and characteristics the ear assumes. The first function attributed to the ear is that of energizing the cortex. In studying the physiology of the hearing mechanism, Tomatis points to the fact that most of the sensory receiving cells in the basilar membrane of the inner ear are accumulated in the zones that pick up higher frequency sounds. These high frequency "charging sounds" provide the human brain with upwards of 60% of its neurological energy (Tomatis, 1976).

The second function attributed to the ear is that of maintaining equilibrium. This function helps the the individual

locate himself in space, and directly affects both his posture and verticality.

The third function of the ear, that of listening, is the most important for communication. It enables the individual to receive, select, and analyze all sounds directed at him and, thereby, communicate with his fellow individuals. The manner in which Tomatis conceptualizes this function is similar to that expressed earlier by Gibson (1972) in her comments on perceptual filtering. For Tomatis, the ear is not just a passive receiver of sound, but an organ which can reach out and discriminate among sounds--i.e., listen rather than just hear. The importance of the ability of the child to critically integrate and synthesize elements of verbal messages for reading has been documented (Berger, 1978).

Within the category of sound reception for communicative purposes, Tomatis distinguishes three hierarchical levels of audition. The most undifferentiated/primitive level is the purely sensorial act of hearing. This does not require any conscious involvement by the individual, but is a less active reception of sound waves. The second level of audition involves active listening. For an individual to listen, the ear must attend to the incoming sound. This implies intentionality on the part of people to direct themselves to the incoming message. The third stage is that of integration. Tomatis' definition of the integrative function of the ear is important to note:

In order to attain the degree of complete concentration required so that assimilation can take place, a mobilization of the self conscious is necessary. Man is uniquely endowed with self consciousness and it is through this quality that he acquires the ability to record, memorize, reproduce, and imitate what he hears...Put another way, integration can be

defined as acquisition of verbal reproductive potential; the ability to reproduce a meaningful sound chain deliberately and at will (Tomatis, 1978, p. 62-63).

The integrative function of the auditory apparatus as postulated by Tomatis carries Gibson's theorizing one step further. Tomatis looks past the point of sensorial tuning to the incoming stimulation toward the conscious motivation required for reproductive ability. This higher auditory function also points directly to the identified linguistic dysfunction in dyslexic children identified in the research.

Before proceeding to the reading process itself and its relationship to phonation and communication between individuals, one must first place this entire auditory process in its developmental framework.

Developmental Prerequisites

Tomatis designates two distinct, yet inseparable, concepts as prerequisite for the development of human consciousness. First, as already alluded to, is the motivational aspect: the desire to communicate. The second, which in essence determines the first, is the bonding relationship one feels for his fellow human beings: the desire to relate.

This bonding relationship, according to Tomatis, has its beginnings in utero. The expectant mother maintains a steady "dialogue" with her unborn child by physiologically transmitting to it, not only the nourishment it requires for growth, but her accompanying emotional states as well.

The mother makes contact with the fetus through sound; visceral, organic and especially vocal sound. The child hears the voice speaking and extracts the emotional essence from it; it is the only semantic he knows. He is surrounded by it,

drenched in it, and it is through its sound that he begins to integrate the basis of his mother tongue (Tomatis, 1978, p. 65.)

What the fetus hears of the maternal voice is distorted by the liquid medium of the amniotic fluid. The resultant sound is one in which all the lower frequency harmonics are filtered out (Tomatis, 1978). Both the eustacian tubes and the middle ear contain fluid in utero and remain that way until the fluid is drained, approximately 10 days after birth. Until that time, the infant is hearing only the higher frequencies. But, with the draining of the ear canal, the medium through which the newborn hears gradually switches from liquid to air. Tomatis has termed this period as the child's sonic birth. Even with this change in the frequency of the maternal voice with which the child has been neuronically engrained in utero, (Tomatis, 1978) the inflections and intonations remain the same: tempering the entire prenatal and perinatal periods with some continuity.

The completion of the sonic birth, for Tomatis, marks the beginning of a symbiotic dyad between mother and child. Communications at this point in the infant's ontological development remains at a very intuitive and affective level. The mother assumes the dual role of provider and interpreter. Very often, it is she alone who can differentiate and understand the varied sounds that the infant emits. Two important events occur during this developmental period. First, the child realized that vocalization can bring satisfaction of need states. The child begins to listen more closely to personal utterings, beginning an exercise period for the ear's apparatus. Second, the beginning of the double syllabic

babbling (i.e., mama, dada) marks the first stage of a progressive neurological lateralization process which will proceed through most of his childhood (Tomatis, 1978).

As the child matures both psychoneurologically and physically, he begins to gain independence and explore the world beyond his mother. In this process of separation and individuation the child gains a second new teacher: his father. Tomatis refers to the toddler's initial communication with the father as an adjustment in which the child must learn a foreign language. The child must abandon the code-like language formerly used as the main communication base, and enter into conventional language. The child must articulate more clearly to make demands and requests intelligible to others. An emotionally/physically distant or threatening paternal figure can arrest this orderly developmental process; as can a maternal figure who, by satisfying her own needs, refuses to allow the child freedom to move away from her. The child must be willing to begin to forego his egocentric need system in favor of the socialization process. In normal development this is dependent on a positively nurturing and loving interpersonal environment, which motivates the child to communicate with significant others and seek to attain their recognition and approval. If this above transition is stalled, the child will have difficulty entering the interpersonal world. Consequently there will be little future need for the reading process. Upon entering school, this child will appear either frightened or impulsive. Since the exploration process is also stunted, the child is not yet ready to learn. "To speak is to be, to verbalize thought, to

pattern thought in the body's image; when we speak we speak of and to ourselves, we listen to ourselves, we exist" (Tomatis, 1978, p. 67). The most significant requirement of this developmental transition from an egocentric to a socialized stance, according to Tomatis, is its reliance on the child's positive relational attitude to other individuals.

Hemispheric Lateralization and Language

In addition to the requisite socio-emotional stance/attitude for communicating and learning, Tomatis also places substantial emphasis on the hemispheric lateralization process and its importance for reading. Tomatis presents quite a detailed neurological explanation of the left-right symmetry (body and brain) and its vital importance to language functions, body image and proper integrative functioning. Only a few of his far reaching conclusions will be presented here. The interested reader is referred to other sources for a more detailed neurological explanation of the process (Tomatis, 1974, 1978).

Tomatis begins with the premise that, within the normal maturational process, the hemispheres assume coordinated but distinct roles in the human organism. Since the left hemisphere contains both the centers of symbolic thought and language maintaining an executive function (i.e., planning and organizing), neurological efficiency requires the achievement of hemispheric lateralization to the left.

Tomatis places heavy emphasis on the importance of the vagus nerve (tenth cranial pair) in both the lateralization process and the emotional/affective development of the individual. According to

Tomatis (1978) the vagus begins its "journey" through the human body by sensitizing the walls of the inner ear at the tympanus, then travels to the larynx, the bronchia, the heart and eventually touches every major organ. It is because of this that Tomatis ascribes great importance to it. He claims that it might very well be at the base of all somatizations of the individual, and that its role in the emotional life of the individual is of great importance.

As is true with major cranial nerves, the vagus is bilateral. However, the route it follows on the right side of the body is shorter and more direct than the left (Tomatis, 1978). Because of this difference, both anatomically (right-left symmetry) and hemispherically, the executor right side (and consequently left cortex) benefits from quicker information processing.

Tomatis has shown that one of the ears always assumes the role of leader in the listening process, much the same as in handedness. According to Tomatis, lateralization is "a functional harmonization imposed by thought as it seeks to be monitored and expressed" (Tomatis, 1978, p. 87). If the individual "chooses" left sided functioning (i.e. right brain and left vagral pathway) he is choosing the less efficient, longer route for self expression. If the right is chosen, it will lead to a more precise monitoring of bodily and language functions creating the conditions for both greater self awareness and self control. Lateralization is viewed by Tomatis as a gradual process of self mastery. He maintains that the dyslexic child has never established this dialogue with his body, thereby making understanding of his environment tedious, difficult and scary.

As the phenomena of language begins to take hold, the child will be progressively steeped in the dynamics of his interaction with this relational or psycho-relational structure. If he is able to adapt successfully to this inborn structure, he will become right sided, for a start. This signifies his acquiescence in the human condition and everything that it implies. But if he resists this adaptation he will be left sided. And if he resists to the point where his dysfunction goes even deeper he will become dyslexic (Tomatis, 1978, p. 89).

Learning and Dyslexia

The next issue which must be dealt with in Tomatis' theory is that of the written word and its relationship to the listening process. The letter, which is the fundamental building block of written communication, is essentially a meaningless sign. The letter gains worth when it is associated with a designated sound. Tomatis argues that the letter never achieves anything more than its sonic value. This being the case; the letter, even in its written form, must be heard. Over time, both on a phylogenetic and ontogenetic continuum, our ears have developed a high degree of specialization in the analysis of the various frequency modulations that make up a particular language. It is this basic premise that leads Tomatis to claim that we read with our ears. The ear must not only be able to translate appropriate sound frequencies into the graphic image, but also must be able to reconstruct the sound from the graphic image as well.

In summary, then, the Tomatis approach views the dyslexic child from two parallel yet convergent perspectives: the neurological organization of the child and his socio-emotional adjustment. Hence, two of Tomatis' basic tenets must be kept in mind:

1. Reading is an integral part of the continuum of human communication. Communication begins for the human infant in utero,

and is enveloped in both the separation-individuation process and in language development.

2. Dyslexia is a reflection of both an immature neurological system (i.e., poor body image, poor eye-ear synchronization, poorly established auditory lateralization) and a disturbance in the socio-emotional adjustment of the individual. The dyslexic child has difficulty decoding both words and the environment in which he lives. More specifically, the dyslexic child remains at an egocentric level of personality development. He interprets his world from his own subjective understanding of it which corresponds only slightly to how others view it. Consequently, he has difficulty accomodating to his environment due to weak adaptive and interpersonal skills.

Tomatis' views of dyslexia would suggest that both the self-structure and the child's adaptive ability might be profitably explored in the psycho-social/personality assessment of the dyslexic child. These variables, along with the dyslexic's response to frustration have implications for their significance in the study and treatment of dyslexia.

Empirical Contributions to the Psycho-Social and Personality Variables in Dyslexia

This present section focuses on three specific areas considered relevant in the theoretical conceptualizations regarding the psycho-social/personality variables of the dyslexic child: (a) social perception and interpersonal skill; (b) self concept and (c) reactions to frustration and handling of aggression.

The trend toward greater involvement by the educational sector in the study of dyslexia and particularly the psychosocial/personality dynamics of the dyslexic child is evidenced by the shift in focus of the literature over the past decade. The shift has been away from the "depth" personality measures, and towards behavioral measures of adaption. Most of these measures and studies are directed at investigating the child in his everyday environment. The observations are made by those who have the most frequent contact with the subjects.

Most of the observational studies use teacher ratings, or rate the child from teacher reports. Keogh & Smith (1970) found that over 90% of the children rated adequately by teachers in kindergarten for reading readiness achieved in the predicted direction by fifth grade. The literature contains many studies which support the reliability and predictive validity of teacher report; and ratings (Bower, 1969; Bryan & McGrady, 1972; Cohen, 1963; Farr & Roelbe, 1971; Haring & Rigway, 1967; Ilg et al., 1965; Kermonian, 1962).

A large amount of empirical evidence exists to support the ideas that both adaptive classroom behavior and the social and affective interactions of the child can be assessed with a high degree of reliability. In short, current behavior is a good predictor of later academic achievement and mental health (Hewitt, 1974; Kellam, Branch and Agrawal, 1975; Kohn & Rosman, 1974; Lambert, 1972; Pimm & McClure, 1967). Kellam et al, (1975) found that the social adaptation of the child as measured by the teacher in the first grade is related significantly to the need, in

subsequent grades, for remedial help. Even when both school achievement and intelligence scores are included in their predictive battery, the measure of social adaptation still made a significant independent contribution to the outcome. Hartsough, Lambert and Zimmerman (1976) have demonstrated that affective behavioral attributes measured in the second and fifth grades were as good as, and in some instances more reliable predictors, of ninth and twelfth grade achievement than were intelligence and achievement test scores. Various research studies have pointed out the link between certain personality variables and subsequent increases in I.Q. and achievement. McCall et al. (1973), in subsequent retesting of preschoolers, found that those who gained in I.Q. were more independent and competitive in the social context than those children who did not. Bayley & Schaefer (1964) stressed the link between social facility and achievement. Bensen & Kuipers (1974) concluded in their study of 90 Head Start children that by age four the relationship between cognitive development and personality is significant. Spontaneous, self initiating children performed well, regardless of sex, ethnic group and/or economic status. The importance of social interaction and adaptive skill has become increasingly linked to dyslexia.

Social Perception and Interpersonal Skill

The above empirical evidence is also in close accord with developmental theory. Piaget (1964) maintains that the child is an active seeker who acts upon, and is in turn acted upon, by his immediate environment (assimilation and accommodation). Through these interactional processes, the child develops balanced

strategies for adaptation. White (1959) claims that the ability to organize, and thereby master, our environment is important for the development of self and a feeling of competency.

These developmental theories have direct implications for the dyslexic child. Bryan and her associates have provided us with detailed observational studies of the learning disabled child (Bryan, 1974; 1974a; Bryan and Wheeler, 1972). She has found that learning disabled children have trouble interacting with both teachers and peers. In general, they exhibit socially inappropriate behavior. In one study utilizing sociometric ratings, results indicated that learning disabled children were rejected by fellow classmates because they were seen as scared, unhappy, and worried (Bryan, 1974a). Bryan concluded that these children have difficulty detecting critical interpersonal cues, and lack the ability to make appropriate inferences about people. Interestingly enough, there appears no age variable in this characteristic. Bryan's work covered children from the first to sixth grades. These results are in line with a much earlier study by Jackson (1944). After comparing 300 reading disabled children with 300 advanced reading children in the second through sixth grades, Jackson concluded that a major factor in the retarded readers was their erroneous conceptions of their environment. Kronick (1976), after observing the interaction patterns of learning disabled children, reached four major conclusions:

1. These children have an unclear image of themselves and receive less truthful or confirming feedback about their interactions with others.
2. The learning disabled child cannot accurately assess or identify affect. There is not a realistic flow between affect and ideas.

3. These children receive ambiguous messages concerning individual and group images, and are too concrete to reconcile the situation.

4. Because these children cannot accurately assess communication from others, they pattern their reactions along erroneous lines. Their communication skills are unclear, shallow, and lacking in appropriate affect.

Lerner (1976) confirms this type of conclusion, maintaining that a deficit in social perception is a key to the learning disabled child. She concludes that, because these children are poor in judging the moods and attitudes of others and generally insensitive to the general social atmosphere, their resultant behavior is inappropriate. Other researchers, using various techniques and studying different age ranges, have found confirming evidence of this deficit in social perception (Bruininks, 1978; Carillo, 1957; Ekwall, 1976; Koppitz, 1971; McGinley & McGenley, 1970; Raygor & Wark, 1964; Stevens, 1971; Wug & Semel, 1976). Stott (1971), utilizing the Bristol Social Adjustment guides, studied 72 children referred to the Center for Educational Disabilities at the University of Guelph. Two syndromes became apparent in this group of children. The first is the unforthcoming child. They are seen as meek, submissive and do not venture into any undertaking when they are unsure. They easily give in to their fears, and can quickly become immobilized with anxiety. The second syndrome pertains to inconsequential children. This syndrome is marked by a lack of checkback to the consequences of behavior. They are impulsive and sometimes aggressive.

The studies reviewed refer to the way in which children are viewed by significant others in their life. The studies do not

address the underlying personality organization of the dyslexic child.

Although the trend in the literature is away from "depth" psychological measures of assessment, research utilizing projective techniques in diagnosis of the dyslexic child has been done. In comparing 25 reading disabled children (ages 8-12) with a matched control group utilizing the Rorschach technique, Abrams (1955) found that the achieving readers showed a greater capacity for emotional adaptation than the non-achievers. This conclusion was reached by comparison of both adjustment ratios (i.e., FC>CF & C) and the frequency of scoring categories for both groups. The reading disabled group showed emotional irritability, impulsiveness, feelings of high anxiety and inadequate internal control systems. The achieving readers had protocols suggestive of better adaptive strategies. In general, achieving readers showed better, more integrated use of color and movement. These results are supported by Ames & Walker (1964). They also found that reading achieving students show greater emotional maturity and more differentiated experiencing of events as compared to their dyslexic counterparts. Meyer (1953), utilizing the Rorschach technique, in comparing normal to reading disabled students in the third grade, concluded that the reading disabled group was unable to differentiate experience. Instead, they showed vague and inaccurate perception. He also found that they lacked knowledge of conventional norms, leaving him to deduce that part of their disability centered around their poor rapport with their environments. The results of these studies are generally confirmed by other research which have utilized projective

material (Gann, 1945; Stavrianos, 1971; Veltert, 1956; Vorhaus, 1952).

By way of a short summary from already mentioned research, the dyslexic or learning disabled child is seen as having a marked deficit in socialization skills. He has difficulty making friends, and is viewed by his peers as worried and unhappy. He lacks independence, and appears unable to judge and correctly act on interpersonal feedback. He appears unable to assess his social position, instead acting upon erroneous conceptions of his milieu. Compared with achieving readers, the dyslexic child exhibits impulsive reaction patterns (suggestive of inadequate internal controls); and, in general, relates to his environment in a less mature, more undifferentiated manner.

Self Concept

Contemporary personality theorists hold the tenet that a better understanding can be gained about the individual by gaining knowledge about his conscious perceptions of himself. Snygg & Combs (1949) have held that all observable behavior is a function of the phenomenal field in which the person lives. Those parts of his field which he perceives as characteristic of himself represent his phenomenal self. The individual's self-concept is the conscious conceptualization of those stable and definite characteristics. They further state that the adequacy of the individual's phenomenal self lies in "the degree to which it is capable of accepting into its organization any and all aspects of reality" (Snygg & Combs, 1949, p. 136). The self, then, is seen as the focal integration point of personality; that which gauges both the internal and external

realities of the individual. Lecky's work (Lecky, 1945), which preceded Snygg and Combs by a few years, stressed self consistency. For him, the self represents the nucleus around which revolves the individual's sense of worth. Lecky saw the self struggling to maintain both inner harmony and conformity with his environment (p. 84). He preceded Roger's concept of congruence by stating that this can only be achieved if the individual's conscious interpretations of his environment are consistent with his experience.

The most widely referred to definition of self arose from Carl Roger's work:

The self concept or self structure may be thought of as an organized configuration of perceptions of the self which are admissible to awareness. It is composed of such elements as the perception of one's characteristics and abilities; the percepts and concepts of the self in relation to others and as associated with experience and objects; and goals and ideals, which are perceived as having positive or negative valance (Rogers, 1951, p. 136).

Various educational and personality theorists have held to the view that the self concept of a child is a crucial determinant of his academic success or failure (Allport, 1943; Glasser, 1969; Jersild, 1952; Rogers, 1951; Silberman, 1970). The empirical evidence to support this position began to accrue in the 1950's and continues today. Reider (1955) found that elementary school children with low self esteem had lower grades than students with high self evaluations. Bruck (1957) later supported this conclusion in a study of 300 children from the third through sixth grades. He found a significantly positive relationship between self concept and academic achievement at all levels. More recently, this stability was shown by Cress (1975). In order to determine the relationship of intelligence to self concept, Walsh (1966) compared the

differences between very bright (I.Q. over 120) under and over achieving boys in grades second through fifth. Utilizing stories and playkits analyzed by independent judges, she noticed the underachieving boys more often represented a boy doll as isolated, criticized and rejected. This was later supported by Brookover's work with 1050 seventh graders (Brookover et al., 1964). Even with the ability factor held constant, their conclusions were that a significant positive relationship exists between self concept and grade score averages. Interestingly enough, they also found that self concept was significantly related to the perceived evaluations of the students by significant others. In a more recent study, Cennane (1977) monitored fourth and fifth graders divided into high and low self concept groups for one year. The high group exhibited consistent academic achievement, while the low group maintained a hostile attitude toward work. Cennane also observed that the low self concept group had fewer positive interactions with their peers, and exhibited behavioral patterns which eventually caused social rejection.

A significant relationship has been found between self-concept and academic achievement from many sources utilizing various measuring devices and different age groups of children (Combs, 1964; Fink, 1962; McDavid, 1959; Ozehosky, 1967; Paschal, 1968; Shaw et al., 1960; Shaw & Alves, 1963; Simon & Simon, 1975; Steven, 1956; Williams & Cole, 1969).

Turning more specifically to the relationship between self concept and reading achievement, the correlation again appears fairly consistent. Bodwin (1957) found a +.72 correlation between

immature self concept and reading disability in the third grade, and a +.62 correlation in the sixth grade. He also found that the good readers' self concepts rose, while the poor readers measured the same. Utilizing a factorial design with 926 children in the fourth, sixth and eighth grades, Hallock (1958) found that reading ability in the first grade is associated with both self-confidence and behavioral stability. In an interesting study using a non-verbal measure of self-social orientation in which each subject had to manipulate objects to represent himself in relation to others, Henderson and Long (1966) compared a reading disabled and a normal reading group of fifth graders. They found that the normal readers showed significantly greater individuation, greater complexity of self concept and stronger identification with both friends and parents, particularly the father. Wattenburg & Clifford (1962) studied 185 kindergarden children to determine the antecedent factor—i.e., reading achievement or high self concept. Their conclusion was that as early as age five, the self concept is antecedent to and predictive of reading achievement. They drew this conclusion after retesting the children two and a half years after measuring self concept. Interestingly, self concept was a better predictor of reading achievement than I.Q. All of the low self concept children had either failed to learn to read or didn't read as well as the high self group. Although most researchers have clearly demonstrated the relationship between self-concept and reading ability (Barber, 1952; Caplin, 1969; Cummings, 1971; Dillard, 1975; Henderson, 1975; Lamy, 1965; Lewis, 1974), studies do exist that indicate little or no relationship (Carter, 1958;

Labelle, 1970; Spicola, 1960). On inspection, these sources appeared to utilize measures which could be considered too global for successful prediction. Specifically in the Spicola study, the predictability of self concept was lost when intelligence was partialled out of the results.

The research cited above supports the general hypothesis that poor readers are deficient in the development of a psychologically healthy self-concept. This general finding appears to hold true for a variety of specific self concept measures for all grades. More specifically, these studies indicate that deficient readers lack individuation, and remain dependent on others, manifesting immature self development. Self-reliance and self worth, therefore, clearly emerge as key factors in learning to read.

Frustration-Aggression

The literature has shown that the reading retarded child has great difficulty adjusting to both his academic and social milieus and that his self concept is poorly developed. Lacking effective means of coping with academic and social demands has been hypothesized to create a tremendous amount of frustration within the individual.

Monroe and Backus (1937) isolated five reactions to continual reading failure often given by students. They are:

1. Aggression--everything associated with reading and learning becomes hated.
2. Withdrawal--manifested either in physical withdrawal (i.e., truency) or cognitive withdrawal (i.e., daydreaming).

3. Compensation—either in physical prowess or satisfaction through disruption.
4. Defeat—reacting either with apathy or depression.
5. Hypertension—constant worry.

Dolch (1931) felt that continual failure might lead to a situation where the student is conditioned against reading.

Probably more deficiency in reading can be traced to discouragement through failure and the consequent attitude of antagonism toward reading...If this condition is allowed to arise, a child may go on from year to year with scarcely any improvement because he never looks at a book unless he has to and then with a distinct aversion (Robinson, 1946, p. 81).

Harris (1966), in comparing 100 non-learners with 100 learners, found a distinct difference between the two groups on an aggression-submission continuum. Many of the nonlearning males studied were scapegoated by their mothers. These children had no opportunity to discharge their anger against mother for fear of loss of love. They ended up with hatred for both the outside world and for themselves. Harris found that the learning disabled children studied possessed extremes of aggressiveness or submission, with a heavy weighting of the learning disabled children on the passive end of the continuum (75%). Because of their need to conform, these children inhibited aggressive energies in favor of conventional outlets. Harris theorizes that reading and intellectual pursuits can make one both unconventional and non-conforming.

For Rosenzweig (1965), affective reactions to frustrating events are either retrogressive, not allowing the child to step beyond past reaction patterns, or progressive, allowing him to adjust appropriately to new situations.

Spache (1954), using the Rosenzweig Picture-Frustration test, found that retarded readers show significantly more overt aggressiveness to others, and less of an ability to accept or acknowledge blame. He found that these children appear to face problems head on, with little insight into their role in the conflict and a lack of strategies to solve the situations. Spache states that these children show significantly less solution-seeking behavior and a resistance to or lack of interest in change.

In a later study, Spache (1957) found that the reading disabled child behaves differently toward adults than toward peers. His relationships with adults are weighted with self-blame, lack of confidence, and by attempts to avoid conflicts. With peers on the other hand, the child achieves recognition by generally aggressive behavior (exaggerated self confidence and a refusal to accept blame).

Two subsequent studies, also using the Rosenzweig as part of their battery, confirmed these results (Connolly, 1968; Lieberman, 1968). Connolly found that dyslexic children are less willing to accept blame or admit inadequacies than nondyslexic children. They either blame others for their problems, or deny them completely. Lieberman found that retarded readers made few attempts to solve their own problems, and instead depended on others to do so.

The overall picture of the dyslexic or reading retarded child as being poorly adjusted in handling frustrating situations, having a lack of insight into his own problems and having aggressive tendencies toward his peer group has been confirmed by researchers using other diagnostic instruments. Utilizing a Reading

Apperception Test and teacher ratings, Hake (1960) concluded that poor readers felt themselves persecuted by both teachers and peers. They often chose defensive patterns of behavior rather than facing their problems. Aggression was used more often as a solution to problems. Bell et al. (1972), using the High School Personality Questionnaire, found a high level of aggressiveness and obedient passivity in his reading disabled group. He concluded that these children showed a low level of psychic energy and an avoidance of both internal and external conflicts.

Zimet et al. (1973) took a different approach than most of the studies reviewed. They initially studied 33 first graders, none of whom showed signs of reading problems. Then they retested 25 of them in the third grade. Using the Rosenzweig, they found a significant positive relationship between the internalization of aggression and achievement in reading comprehension. They attributed this to the development of impulse control on the part of the successful students.

An interesting study was conducted by Bricklin and Bricklin (1967) in which movement responses on the Rorschach in three separate groups of children were studied (underachievers $n=40$, achievers $n=25$, and children with other conflicts, $n=25$). Thirty-one of the 40 underachievers produced aggressive movement responses in small detail areas. This led the authors to conclude that these children have strong feelings of anger which are only expressed in limited areas of life. Many of these aggressive feelings are projected into the past, away from their own ego boundaries. This

denial of their own feelings arises, the authors postulate, from the fear of losing their dependency objects.

The pattern of the psycho-social/personality adjustment of dyslexic children is becoming clearer. They are viewed by significant others as having major difficulty adjusting to their social milieu. Interpersonal interactions are marked by fear and an inability to gauge others' reactions and decide on an appropriate response. Some authors conclude that a deficit in social perception exists. They are also seen as having a poor self image, attaching little worth to their own skills, and leaning heavily on others for direction. The literature points to the conclusion that dyslexic children express strong dependency needs, coupled with a lack of desire for autonomy and separateness.

Many of the conclusions reached by projective research indicate that the normal reading student shows higher levels of emotional maturity when compared with their dyslexic counterparts. The normal reading children consistently exhibited better rapport with their environment, showing more differentiated experiencing of physical and social events. The major implications of this research are that the affective integration of the dyslexic child is developmentally below that seen in the normal reading child. Also, the literature indicates that the reading disabled child's structuring of experience is usually at odds with the accepted social consensus.

It can be seen then, that empirical research has designated specific psycho-social/personality variables implicated in dyslexia. The intriguing question of how these variables affect, or are

affected by, the remedial process remains ever present in the literature.

Remediation of Dyslexia—Contemporary Approaches

The remediation of the dyslexic child takes diverse directions, depending on the theoretical orientation of the professional involved and the strengths and weaknesses of the children in question. The educational sector offers numerous pragmatic approaches for the educator/teacher to provide either individualized or group instruction. The most often used approaches include, sight word-configuration approaches, vocabulary enrichment programs, perceptual-motor programs, visual and auditory development and phonetic skill development. The psychological discipline has offered adjunct programs which range from individual guidance and psychotherapy to behavioral token systems. It is beyond the scope of this thesis to discuss and evaluate these various approaches. The following section will focus on the short and long term effects of remedial programming to provide the reader with an overall view.

West et al. (1978) made the observation that, through remediation, quantitative change (i.e., ego skill strengthening) is often contrasted with qualitative change in the child's personality organization (i.e., lowered self-esteem, anxiety, frustration). They stressed that in some instances emotional difficulty is reflective of the learning deficit, while others the reverse is true. They concluded:

...the child needs concurrent help with his feelings resulting from the learning deficiency in addition to the appropriate tutoring program. The personality is the force that puts the learning tools to work. If it is unavailable or unresponsive, remediation of the target learning symptoms is difficult (West et al., p. 57).

The remedial literature is heavily weighted with studies that focus on "quantitative" change, often ignoring the concurrent psychosocial/personality variables that play a part in the process. Recently articles have begun to focus on the short sightedness of the unidimensional approach. Shelton (1977) has placed emphasis on the affective component of remediation which must be integrated with cognitive approaches for success with the dyslexic student. She stresses the following: the physical environment; the psychological climate or atmosphere in the learning milieu; a curriculum that must emphasize communication and self enhancing skill, perceptual ability assessment; evaluation that included affective and personality areas; and teacher training and effectiveness to carry through the appropriate techniques.

This trend in the literature is reflected in the increasing number of studies which emphasize parental involvement in the remedial process (Abrams & Kaslow, 1977; Kroth, 1975; McLoughlin et al., 1978). Abrams & Kaslow (1977) present a continuum of differential treatment approaches which include educational intervention, individual therapy, parental group counseling, and family therapy.

The dominant education viewpoint in North America stresses both early identification of the dyslexic student in order to provide either placement in a special education classroom and the provision of supportive remedial help.

The grouping of poor readers early in their educational careers appears to do little in improving their later reading scores (Balow, 1965; Buerger, 1968; Muehl & Forell, 1973; Newman, 1972). Newman

(1972), in studying 230 children randomly placed in low reading groups in the first grade and retested after sixth grade, concluded that placement of children in such reading groups "has neither short nor long term effects on later learning characteristics" (p. 505).

Lovell et al. (1963) looked at children referred to full time remedial centers. Even with this intensive intervention they found only a 1.6 year improvement in skill for every 2.7 years in the program. They concluded that if the child is behind in reading at 8 1/2 to 9 years of age, chance of future success is, at best, guarded. Rasmussen & Dunne (1962) evaluated correctional classes established during the seventh grade and continued through high school. They found no significant improvement over five years in children with normal I.Q. Gottesman (1963), retested 43 learning disabled children (ages 7-14) five to seven years after their referral to an outpatient clinic. Wide Range Achievement Test scores revealed only a four month improvement in single word reading skill for every chronological year.

Most of the research in the literature seems to suggest that the effects of remediation are evident while the remediation is taking place; but once the remedial efforts cease, the skill level begins to decay (Buerger, 1968; Carroll, 1972; Heckerl & Sansbury, 1968; Lovell et al., 1963; Silberberg & Silberberg, 1969).

Remedial effects appear to have better (i.e., more long lasting) results when the dyslexia is approached from a broader perspective than purely academic. Many behaviorally oriented systems which have appeared in the literature, exhibit success by applying effective reinforcers to successful reading experience

(Camp, 1973; Curry, 1970; Glavach & Stoner, 1970). As in more conventional remediation, the long term success of these approaches is still in question (Macmillan & Forness, 1970).

Schacht et al. (1976) appeared to have success at long term remediation by stressing long term psycho-therapeutic remediation. Their approach focuses on the total child, incorporating both knowledge of special education and intrapsychic development. Stressing an individualized long term approach (three years and up), they present case study evidence that the child can eventually achieve grade level reading skills.

Earlier research supports an improvement in reading skill utilizing nondirective play therapy techniques (Axline, 1947; Bills, 1950; Fisher, 1953). A more recent, well controlled study (Winkler et al., 1965) brings into question whether individual group counseling will result in positive effects on academic skills.

In summary, numerous and varied techniques for remediation of dyslexia appear in both the psychological and educational literature. To date, none of the more frequently used techniques have been found, consistently and over time, to make inroads into the reading disability. The major point to remember is that most remediation begins to decay once the intervention ceases. Research has not focused on the effects of remediation on the psycho-social/personality variables that are involved with the dyslexic child. With the advent of a more holistic focus on remediation, the emphasis is being shifted away from a uni-dimensional view of the

dysfunction. In this context, Tomatis' approach to dyslexia (audio-psycho-phonology) attempts to re-educate the dyslexic by emphasizing neurological, perceptual, affective and interpersonal dimensions.

Audio-Psycho-Phonology: Re-education via the Electronic Ear

The re-education of the dyslexic via Audio-Psycho-Phonology (APP) is an attempt to create within the child the proper attitude toward communication. It must be remembered that for Tomatis, dyslexia is the result of a breakdown in the normal auditory-linguistic functioning of the individual.

According to Tomatis, re-education of the dyslexic is a three step process which roughly attempts to stimulate the normal developmental process. The child is brought through the three stages in sequence, and is only allowed to proceed to the next stage when the former is successfully completed. The three stages through which the dyslexic child proceeds are (a) the reuniting of the child with his pre and post natal environment via filtered sound; (b) auditory lateralization and enticing the child to forego his dependency relationship to meet the "other" (this refers to the socializing agent in the child's developmental process) through a performance stage; and (c) the directing of consciousness inward to encounter the self via a training period.

The Filtered Sound Stage

As previously mentioned, this stage is an attempt to recreate or approximate the sonic environment the child experienced in the womb. The mother's voice was heard initially through a liquid medium (the amniotic fluid). To simulate this, her voice is recorded on tape and passed through screening filters to block out

lower frequencies. If the mother's voice is unavailable, then filtered music, rich in high frequencies (i.e., Mozart) is an adequate substitute. The child is usually unaware of who is speaking to him on the tape and the filtering is such that it is consciously unidentifiable.

The purpose of this stage is all important for eventual successful remediation. It is an attempt to reawaken the archaic pre and parinatal experiences and rekindle the innate communicative desire within the individual. According to Tomatis (1978):

As a rule, a desire to listen manifests itself in the child's behavior right from the beginning of the filtered sound sessions. He becomes more alert, more active, wants to communicate, suddenly shows a great desire to live and to exteriorize as if this sensory, psychoanalytic evocation were re-admitting him to a past time still virgin of life's conditioning and the burdens of experience. Blocks that have imprisoned these children in a state of disability from the earliest moments of their lives seem to melt away as if they had never been (p. 147).

The last portion of the filtered sound stage of re-education is that which Tomatis has termed the sonic birth of the child. This entails a gradual lowering of the filtered voice over sessions, corresponding to the initial draining of the middle ear approximately ten days after birth. According to Tomatis, it is this important emotional experience that causes children to seek the source of their comfort, their mother. This recreates within the child the basic desire for communication and life.

The Performance Stage

Although this stage in the child's re-education is marked by a more active participation than just passive listening, it is initiated with a passive prelinguistic phase. During the prelinguistic phase the child listens to unfiltered songs and

stories. This serves as a buffer between the sonic birth and the active participation of experiencing the "other".

The performance stage formally begins by having children repeat into a microphone individual sibilant words (i.e., words rich in higher frequency sounds). During alternative sessions children will listen to filtered high frequency music. Very often, dyslexic children have articulatory problems, which result from both an inability to monitor their own phonation and from their lack of discriminative listening skills. While repeating sibilants, children are receiving immediate feedback of their voice through the electronic ear. Through repeated practice they will begin to monitor their own phonation more closely.

Gradually during this stage, less sound is directed through the earphones into the left ear, strengthening the right ear (and left temporal cortex), and hastening auditory lateralization.

On a psychological level much is accomplished during this period of re-education. With the strengthening of the children's self listening skills and increasing right-ear lateralization, the children are becoming more aware of themselves as separate entities, freeing them from the egocentrism and dependence that has bound them for so long. "...the verbal I and the notion of the other expand, crystallizing the child's sense of the distance between the individual ego and that of the 'other'" (Tomatis, 1978, p. 150).

This increasing self awareness and sense of separateness is a very difficult transition for the child. It is of utmost importance that a qualified therapist be present during this process to support the child's new self awareness.

The Training Stage

This last phase in the re-education of dyslexic children requires even more active participation than the performance stage. Whereas in the filtered music stage the dialogue was created with the initial humanizing element (the mother) and during the performance stage the child was required to project outward into the world of others, this last phase leads the child into an encounter with self.

This final goal is achieved by having the children read into the electronic ear while receiving immediate feedback of their voice through the earphones. The children still receive interspersed sessions of high frequency music to aid in relaxation. Then a third element is begun, that of Gregorian chanting. The chanting, according to Tomatis, continues the introspective attitude through continued improvement of the child's monitoring of his voice modulations.

In essence, then, the Tomatis technique for re-education of the dyslexic child does not formally teach the child to read, but seeks to create, or recreate, the proper conditions within the child for autonomy and communication.

Purpose and Rationale

The purpose of this study is to determine whether certain aspects of the dyslexic child's psycho-social/personality functions will exhibit positive change concurrent with the APP remediation.

In studying the inter-relatedness of remediation and psycho-social/personality variables, it was felt that an intensive case study, using more than one child, would provide the most clinically

relevant information. First, the heterogeneity of dyslexic's symptomatology is widely accepted. The developmental nature of the disability presupposes an idiosyncratic mixture of nature and nurture. Past research and theory has indicated that dyslexia is a more encompassing problem than an experienced difficulty in decoding the written symbol. Cognitive functioning is mediated through, and can be subverted by, the psycho-social and personality structure and organization of the individual that has taken shape through the intra and inter-personal developmental process. Thus, although broad classification systems are helpful economically, the effects of any remedial process on the unique child can best be revealed through individual study.

From the theoretical positions stated earlier, a number of relevant developmental issues should be reiterated. Within the normal course of development, the following tenets are applicable: First, from birth (and probably before) all perceptions of the infant are cathected with an affective valence. These perceptions include, not only how children view others and subsequently reacts to interpersonal situations, but how they view themselves in relation to others. Second, the motivational substrata of language and reading skills, which are socio-cognitive adaptive mechanisms and part of the dynamic interaction of communication, are derived from these affect-laden perceptions. Third, the developmental process (maturation and the individual's unique milieu) shapes the perceptual-cognitive style and personality makeup of children. Distortions in the normal separation and individuation process will be reflected in the affective and personality development of the

child. Fourth, the reading level that children achieve is based both on psycho-neurological functioning, as well as an ability to adapt to an environment. Because of this inter-relationship, reading skill achievement cannot be viewed in isolation from personality organization.

From this developmental perspective: successful remediation of children's reading disabilities might be expected to require shifting the affectively-based perceptions to evoke a positive change both in children's inter-personal relationships and, in how they view themselves. It has been suggested by Tomatis (1978) that dyslexia can successfully be remediated through a technique known as audio-psycho-phonology, which addresses the underlying auditory and language difficulties. It seeks to create the proper conditions within children for autonomy and more adaptive communication. If this is accomplished, Tomatis believes that children will willingly launch themselves into the world of the written word, for the underlying desire for communication has been reawakened.

Therefore since dyslexia is considered a multifaceted dysfunction, it should respond to APP re-education because this technique addresses its multidimensional nature. The purpose of this study is to test this proposition in five intensive single case studies, via a series of specific research expectations.

Research Expectations

1. It is expected that there will be a positive change in the way significant others view the child's social and self adjustment.

Dyslexic children are viewed by significant others as having major difficulty adjusting to their social milieu. They are seen as

having poor self image, attaching little worth to their own skills and leaning heavily on others for direction. Interpersonal interactions are marked by fear and an inability to gauge other's reactions and decide their own appropriate response. This leaves some authors to conclude that a deficit in social perception and interpersonal relationships exists. From the theoretical position stated earlier, Tomatis views the deficient auditory and linguistic skills of the dyslexic as leading to poor social adaptation. Developmentally, the importance of language in the socialization process is of utmost importance. The ability of the child to attend (listen), auditorily decode, distinguish intonation, and form an appropriate response, play a major role in social adjustment. To measure the change in these areas over the course of study, two rating scales were employed; the Child Behavior Rating Scale (Cassel, 1962) and the Inferred Self-Concept Scale (McDaniel, 1973).

The Child Behavior Rating Scale divides the child's adjustment into five areas (social, self, school, home and physical), and was developed to be used by both teachers and parents. This makes it well suited for this study, since it will provide a comparison between two of the most important aspects of the child's environment: home and school. The Inferred Self-Concept Scale was developed for professionals working with children to gauge self development.

2. It is expected that there will be a positive change in the way the children view themselves, in so far as they will be able to evaluate their feelings of self worth more realistically.

3. With improvement in the children's reading skill level, it is expected that there will be a change in the way they conceptually handle frustrating experiences.

Research has shown that dyslexic children express strong dependent needs coupled with a lack of desire for autonomy and separateness. They view themselves as social isolates and; at times, feel so overwhelmed by external circumstances that they either deny its existence or place blame on others for their plight. This may be related to a tendency to mistrust authority figures and their attempts to enhance self esteem with their peer group. This area of research points to how dyslexic children view their own role within their milieu. Tomatis points to the egocentric nature of dyslexic children and how their subjective view of the world distort their feelings of self. To measure these areas and how they vary over the course of remediation and followup, two instruments were employed: The Self-Esteem Inventory (Coopersmith, 1975) and The Rosenzweig Picture-Frustration Test (Rosenzweig, 1948). The Self-Esteem Inventory was used to tap the children's feelings of self worth in relation to social, familial, academic and personal areas of experience. The Rosenzweig Picture-Frustration Test measures how children react to frustrating experiential situations. It is useful as well, because it provides a means of comparing the children's differential reactions to peers versus adults.

4. With positive changes in the children's own self esteem, perceptions of the children by significant others, and in their ability to cope with frustration: it is expected that the underlying personality organization of the children will change as

well. This change should be evidenced in greater cognitive and affective integration as well as in more differentiated structuring of their experience.

Research, which has utilized projective material to study the personality characteristics of dyslexic children, indicates that emotional immaturity underlies many of their psycho-social difficulties. The situation becomes chronic because the dyslexic students also exhibit less differentiated experiencing coupled with inflexible adaptive strategies. Affective integration is developmentally below that seen in the normal reading student. To measure change in these areas, the Rorschach Psycho-Diagnostic and the Child Personality Questionnaire (Cattell, 1972) were used. The Rorschach allows the researcher/clinician to comment on the children's perceptual-cognitive and affective integration as well as their level of personalization organization. The Child Personality Questionnaire divides the children's personality organization into fourteen source traits and serves as a more objective device for measuring change.

APP remedial re-education claims to retrace the social identification process, thereby giving children a strengthened referent system (self). They can gauge and evaluate, more appropriately, the experiences and realities through which they live. One would expect, therefore, that with successful remediation: the above psycho-social/personality measure will exhibit positive change. Tomatis' theory suggests that with the increasing ability of children to monitor and command their auditory-linguistic mechanism, they will make progress toward a more

objective view of themselves and their interactions within their milieu. The first stage of APP (passive listening) seeks to recreate and fundamentally alter the primordial cathected affect. In constructs presented earlier by Holmes (1957, 1959, 1960), the neurologically engrained mobilizers will change through the re-awakening of the subconscious prelinguistic affective feeling states. Once accomplished, the second phase of remediation (the performance stage) seeks to strengthen the distantiation between symbolizer (mother) and symbol (the word); thereby fostering the internalization of experience via language (Werner, 1963). Once this is attained: the training phase redirects the re-education back toward the self; fostering a higher level of structural integration. The APP remedial re-education is hypothesized to directly effect the components of the dyslexic's personality referred to by Athey (1966): lack of autonomy, poor self esteem, the frustration and unrewarding nature of the learning process, and the orientation that keeps the dyslexic isolated from peers. Tomatis indirectly contends that APP will simulate an environment that redirects the child back through Erickson's first three stages of personality development (a sense of trust, autonomy and initiative). It follows, then, that the structure and organization of the child's personality and social adjustment will change, altering strategies for coping with both internal and external environmental demands. From an ego psychological framework, the Tomatis re-education technique should free the ego from its task of repression and refurnish it with the required energy for learning.

CHAPTER II

METHODOLOGY

The methodology section will focus its attention on four areas. First, a brief discussion of the intensive case study design will be presented. It is felt that since this design approach is out of the mainstream of dissertation research, the strengths and limitations of it should be aired. The second part of the methodology section will be devoted to a discussion of the instrumentation that will be used to explore the previously stated research expectations. Third, a subsection entitled selection of subjects will outline the criterion results used to choose the children for this project, then briefly present history and criterion for all five children. Next, the procedure subsection of this chapter will cover both the APP remedial program that all the children went through as well as the administration of the individual tests that were utilized.

The Case Study Approach

One of the problems that exists in reviewing the literature in the field of dyslexia, is the apparent contradiction of research findings. Most of the existing studies are correlational in nature, comparing a group of retarded readers to a group of normal reading level children. Results of these studies have shown weakness in both chosen variable and instrumentation. (Connolly, 1968). A third possibility exists, that the two initial

homogeneous groups of children were in fact heterogenous in regards to either the disability or their normality (Bell, 1945; Harris, 1976; Holmes, 1961; Samuels, 1973; Strange, 1940). This problem is especially confounded in the study of personality (Holmes, 1961). Samuels (1973) points to two types of studies (match-group and piecemeal) that have as yet drawn no consistent results in the study of dyslexia. Because of the inability to match groups on all relevant variables, results of match group designs have proven inconsistent. Samuels also implicates piecemeal studies that have investigated a single factor, stating that because of their popularity we have a large number of variables that appear implicated in the problem. The main weakness in both types of studies, consists of their inability to present a comprehensive picture of the child and the factors relating to either his remedial success or failure.

The area of outcome studies, comparing group mean pre-test to group mean posttest scores has come under increasing criticism as well (Lackenmeyer, 1970; Lazarus & Davidson, 1971). The main drawback of such an approach is that client change during treatment can be lost in such group design because individuals can vary opposite each other on the specific variable studied. This criticism can lead to false generalizations about the actual effects of treatment (Bakan, 1967; Thoresen & Anton, 1974).

Many authors have exhorted the benefits of single subject research (Dukes, 1965; Edelston, 1950; Holmes, 1961; Shapiro, 1960; Sidman, 1960; Strang, 1940; Thoresen, 1978), yet there still remains an unscientific aura associated with this type of clinically based research.

The history of psychology is such that most often heuristically oriented intensive case studies has led to more systematic investigation of the appropriate variables. One is reminded of the intensive case studies by Freud and Piaget. More recently, ~~the~~ clinical case studies of Wolpe (1958, 1961) and Lazarus (1961) in desensitization, lead to more controlled laboratory studies on the technique, that ascertaining its most effective aspects (Davison, 1968; Paul, 1966). In all instances, the case study raised many questions and provided valuable direction for ongoing study.

A major criticism of the intensive case study approach pertains to the lack of internal controls. Campbell and Stanley (1957, 1963) list eight different extraneous variables that must be controlled in such an approach. They are as follows:

1. History—specific events occurring between the sets of measurements in addition to the experimental variables.
2. Maturation—biological or psychological processes which vary with the passage of time, independent of specific external events.

3. Testing—the learning effect of the test in repeated administrations.
4. Instrumentation--changes in the scorers or the measurements themselves which will change the outcome scores.
5. Statistical regression—because of the extreme nature of the initial groups, scores will naturally vary toward the mean.
6. Selection—bias resulting in the selection of subjects.
7. Experimental mortality--loss of subjects during experimentation.
8. Interaction of selection and maturation.

In behaviorally oriented ideographic research, internal validity is handled either by a return to baseline and subsequent reapplication of the experimental variable, or by multiple baseline designs which apply the experimental variable to a number of behaviors in question (Baer et al., 1968; Haring & Phillips, 1962; Sidman, 1960). Neither of these applications were possible in the present research, returning to baseline for ethical reasons, the latter because of an inability to factor out specific causal relationships in personality and psycho-social characteristics. According to Edgar and Billingsley (1974) the ultimate control of N=1 studies lies in its replication, proving that none of the eight factors

affecting internal validity were responsible for the resultant change.

In the present study, five separate cases were employed in an attempt to build in partial replication and partially to account for history and maturation as well as to guard against experimental mortality. In essence, multiple single cases will partially control for history, but without control groups maturation can only be dealt with through inference. Research has shown that even with remediation, the dyslexic will in most instances remain behind in his reading skill (Castillo & Conti, 1977; Frauenheim, 1978; Howden, 1967; Koppitz, 1971; Lovell et al., 1963; Newman, 1972). The dyslexic child appears to increase in reading skill only five to six months for every academic year (Rourke, 1975). Inference about psychosocial/personality change in the dyslexic child over time is more difficult since it has not been directly addressed in the literature. In investigating nondyslexic children, investigators have shown that some psychosocial/personality functions do show consistency over time. Bronson (1966, 1967, 1969) has shown that childhood behavior remains stable along three continuums through adolescence: withdrawal-expressiveness, reactivity-placidity, passivity-dominance. Other authors have shown that both aggressive behavior and social interaction patterns appear stable frames of reference as well (Kagan &

Moss, 1960; Waldrop & Halverson, 1975). Since maturation can never be fully controlled for without control groups many of the measures of change will have to be interpreted with a view to developmental considerations.

A second major area of concern in case study research is that of external validity, or the generalizability of findings. The general opinion in some circles of psychological research is that N=1 studies provide no basis for population variability since the samples have not been drawn randomly. This leaves the case study dependent on a logical rather than on a statistical basis for generalization (Edgington, 1967).

Kiesler (1971) and Underwood (1957) have divided the area of generality of results into three different concerns: client generality—would the therapeutic treatment be effective on other clients with the same effectiveness; therapist generality—would a different therapist obtain similar results; and setting generality—should the therapeutic technique work in different settings. In the present research, since five different dyslexic children were chosen plus four different research assistants handling their remedial programming, the first two criticisms were to some degree controlled for. Chassan (1961) has argued that the generalizability of an intensive case improves with the number of cases being studied.

As previously mentioned, the present design is an intensive case study design. Schematically the design appears as follows:

A-B-C

With A representing the initial two month baseline; B representing the 10 month APP remedial training period and C representing the follow-up period. The design incorporates successive psychological assessments (every two months for most of the measures) throughout the study to assess the specific child characteristics throughout the process. Because of the descriptive nature of such a design, fluctuation of the dependent variables can be studied both in relation to each other and to the baseline, intervention and follow-up periods.

The most persistent problem that arises in this type of design is data analysis. Case study does not meet the preliminary assumptions for parametric statistical analysis, namely, randomization of sample, error components not being homogenous or normally distributed and error components not being independent (Thoresen & Anton, 1974), Scheffe (1959) has shown that violation of independence reduces confidence intervals from 95% to 75% for slightly autocorrelated data. This is further supported by Glass et al. (1975). The problem is further intensified when the dependent measures cannot be used repeatedly (Gastwirth & Cohen, 1970).

Various alternatives have been offered for parametric statistical analysis. Glass et al. (1975) expanded on Box and Taio's (1965) methods of integrated phases. White (1971, 1972) and Koenig (1972) have used median slopes to measure progress between phases of treatment. But in both of the above mentioned techniques dependent measures must be used repeatedly. Most questionnaires and personality inventories were not designed for such repeated use (Thoresen & Anton, 1974).

Although statistical analysis is ruled out in presentation of results, more recent authors speak to ways in which visual analysis of case study experimentation can be effective (Glass et al., 1975; Jones et al., 1977; Kazadin, 1976; Kratochwill & Levin, 1978). Specifically the use of graphs and tables become important. These authors recommend that certain aspects must be attended to in order to secure a more objective analysis:

1. Baseline Stability: If the baseline remains stable, effects of intervention are easily attributed. If baseline drift occurs in the same direction as the intervention effect, it will be difficult to ascribe to a specific cause. If baseline remains stable, or if drift is in the opposite direction to the intervention effect, one can easily attribute the change to the intervention. (Kratochwill & Levin, 1978).

2. Trend and Changes in Level: Changes in trend and level (slope of line) can occur in many varied ways. The more abrupt the change in level and/or trend, the stronger the argument for a treatment effect. Change can be temporary, delayed or decayed as well.

Although visual analysis of trends can be misleading (Jones et al., 1977), the specific experimental conditions of the present investigatory research leave the writer with few choices. In defense of the present design, one must return to the inability of conventional research designs to provide consistent results. The present experiment is exploratory in the sense that it is hoped it will generate more questions than specific answers. The results must be considered with reference to the lack of specific internal controls and more conventional analysis.

Instrumentation

Academic Achievement Measures. Two tests of academic achievement were used to monitor each child's academic progress through the remedial programming, namely the Gates-MacGenetie Reading Test (Gates & MacGenetie, 1965) and the Wide Range Achievement Test (Jastak & Jastak, 1976).

Gates-MacGinitie Reading Test (Gates). The Gates was standardized on over 40,000 pupils in 38 communities with size, geographical location, average educational level and average family income all taken into account for selection. Reliability coefficients for the two subscales used in

this study, comprehension and vocabulary, are all quite high. Alternative form reliability for the vocabulary subtest are .85 for grade three and four. For the comprehension subtest, grade three alternative form reliability is .87 and grade four is .83. Split-half reliabilities are also quite high, with comprehension achieving .91 and .94 respectively for grades three and four; and vocabulary achieving .89 and .88 for the same grades.

Both of the Gates subtests also compared favorably to the Lorne-Thorndike Verbal I.Q. test, both achieving correlations of .60 in grade four.

Wide Range Achievement Test (WRAT). The reliability of all three of the WRAT subtests are quite high. Correlation coefficients for the reading and spelling subtests ranged from .92 to .98 and for the arithmetic subtest from .85 to .92.

The authors present numerous examples of external validity for the WRAT subtests. When compared to the California Mental Maturity I.Q., WRAT reading achieved a .81 correlation coefficient, WRAT spelling at .74 correlation coefficient and, WRAT reading a correlation coefficient of .84. Individual subtests have also shown strong correlation with other achievement tests. In grades three and four validity coefficients between WRAT reading and scales of the Stanford Achievement test vary between

.63 and .83 with the majority falling in the high .70's. WRAT arithmetic also compares favorably to the arithmetic scales of the Stanford with validity coefficients varying between .53 and .75 for grades three and four. The WRAT spelling showed a .93 correlation with the Stanford Dictation Test.

In general, both of the achievement tests show high reliability and validity scores. A composite academic index will also be used to measure the child's progress over remediation. This index is the mean of the total of the five subtests, from the two academic measures used.

Psycho-Social/Personality Measures

The Child Behavior Rating Scale (CBRS). The CBRS was developed by Russell N. Cassel in 1962. It consists of five adjustment areas (self adjustment, home adjustment, social adjustment, school adjustment and physical adjustment), and requires the rater to score the child's behavior along a six point continuum in accordance with how well he fits various behaviors listed. One of the most valuable dimensions of the scale is that it was developed for both teachers and parents, enabling a means of comparison between these two groups. Neither parents nor teachers were asked to complete the entire scale. Both were asked to score the self and social adjustment scales and the teachers completed the school adjustment section as well.

Both reliability and validity appear high for the CBRS. All of the items in the scale were developed from summary case reports and the scale was able, at a statistically significant level, to differentiate between 200 maladjusted and 200 well adjusted children. Construct validity also appears high on the CBRS. Both teacher and mother ratings of the CBRS correlated significantly (.01) with reading, arithmetic and language achievement (Metropolitan Achievement Test), and social quotients (Vineland Social Maturity Scale). In regards to reliability, after retest, 50 teachers achieved a .91 consistency and 50 parents achieved a .73 consistency in scoring (Cassel, 1962).

The Inferred Self-Concept Scale (ISC). The Inferred Self-Concept Scale was developed by McDaniel in 1973. The scale consists of 30 items, in which the rater must decide the frequency at which each behavior listed occurs on a five point scale. Unlike the CBRS this scale was developed specifically for professionals observing classroom behavior. The scale reveals one total score, which is viewed on a continuum between socially undesirable and socially desirable self-concepts.

The Inferred Self-Concept scale was developed on the underlying assumption that the child's self-concept can be rated from their observable behavior. The scale was developed from a list of 100 behavioral items chosen from

the literature. Eight judges from the fields of education, psychology and psychiatry rated the items and the 30 highest consensus items were retained. There is strong evidence in the literature correlating the child's manifest self-concept with various I.Q. scores. The author sought to prove construct validity by showing correlation between the total score on the ISC scale and I.Q. scores. The ISC correlated significantly (.01) with language IQ, nonlanguage IQ and total IQ (California Tests of Mental Maturity, Grades 1-6). The self-concept score also correlated significantly (.05) with arithmetic achievement and total achievement (Metropolitan Achievement Test, Grades 1-6). Reliability on the ISC sale also appears high. Utilizing split half reliability coefficients, counselors, and teachers achieved Pearson product moment correlation coefficients of .86 and .85 respectively.

The Self-Esteem Inventory (SEI). The SEI was developed by Coopersmith in 1975. The inventory consists of 58 statements which the child must decide are either "like me" or "unlike me". The scale was designed to evaluate the child's attitude towards the self in social, family, academic and personal areas of experience. Included as well is a lie scale. Because of the retarded reading levels of the children involved in this study the SEI questions were read to them and they verbally responded either "like me" or "unlike me".

Coopersmith (1967) reports a test-retest reliability at .88 over a five week period and .70 over a three week period. Fullerton (1972) also reports a fairly high test-retest reliability of .64 over a 12 month period. A number of convergent validity studies are reported suggesting a high degree of agreement with similar scales (Getsinger et al., 1972; Taylor & Reitz, 1968; Ziller et al., 1969). Various other studies report that the SEI scores are significantly related to perceived reciprocal liking (Simon & Bernstein, 1971), perceived popularity (Simon, 1972), and creativity (Coopersmith, 1967).

The Child Personality Questionnaire (CPQ). The CPQ was developed by Cattell in 1972 from his work on the 16PF and the High School Personality Questionnaire. It is a forced choice questionnaire that divides personality into 14 source traits and four secondary traits. Because of the objective nature of the measurement it is imperative that tested reliability and validity be high. After a two day period, with a sample population, the 14 source traits achieved reliability scores (which the authors refer to as test consistency) of .56 to .80 with most scores in the .70 range. Validation, which in the original study was not done in relation to clinical correlation but was compared to concept validity and pure factor correlation. Both sets of scores are very high, the majority of which are in the upper .70's. A number of concrete validation studies have

exhibited some strong relationships between separate CPQ traits and observable behaviors. Werner & Bachtold (1969) found high achieving students scored high on 3 CPQ scales; higher intelligence, greater emotional stability, and greater venturesomeness. Rushton (1966) has shown a correlation between the CPQ factors of emotional stability, conscientiousness and sensitivity with adaptive classroom behaviors.

In a study by Bazimore & Gwaltney (1973) a group of 30 disabled readers (approximately one year behind) were compared to a normal reading group and the CPQ differentiated at a .05 level of significance on at least two of the factors. Five other factors leaned heavily in the significant direction.

The Rosenzweig Picture-Frustration Test. The Rosenzweig Picture-Frustration test was developed by Rosenzweig in 1948 and consists of 24 cartoon like pictures in which the child must respond to a statement by an anonymous figure (either a child or an adult). The situations are designed to measure the child's typical reactions to frustrating and stressful situations.

In utilizing the Rosenzweig, Spache (1956) compared a group of retarded readers to a normative group of children. His conclusions were that the retarded readers were more aggressive and defensive than other children, less

insightful in their behavior, and relatively inept at handling conflict situations with adults.

More recently, all the scoring categories, except obstacle dominance, were found to have significant (.01) product-movement correlations after a three month retest period (Rosenzweig, 1978). In a presentation by Rosenzweig and Adelman (1977) validity was broken down into primary-construct validity, and secondary pragmatic validity. The authors present developmental and theoretical evidence for construct validity. Studies exist suggesting that the constructs employed in the Rosenzweig reflect the developmental sequence in terms of the increasing inhibition of hostile reactions through adolescence (Zimet, Rose & Camp, 1973). Empirical research is also presented showing both physiological and exposure to stress studies and changes in the Rosenzweig response categories. In utilizing various age groups with different behavioral makeups, the overall validity of the measure seems beyond doubt (Mirmow, 1952; Spache, 1956).

The Rorschach. The Rorschach technique is probably the most frequently used projective measure both in psychodiagnostics and in clinically based experimentation. Interpretation of the Rorschach is based heavily on the theoretical concepts of both projection and perception. Inferences are made about the personality organization of

the subject by the interpretations he gives to "ambiguous and indeterminate visual stimuli" (Piotrowski, 1974, p.1).

The Rorschach, despite its vast popularity, has met with criticism over its subjective interpretation, and questionable reliability and validity. Most attempts at measuring either temporal consistency or clinical validation using the most accepted experimental and statistical techniques have yielded at best mixed results and have raised numerous methodological arguments (Harris, 1977; Holzberg, 1977). Holzberg (1977) presents temporal consistency results suggesting that test retest of Rorschach is more satisfactory over short periods of time (i.e., one month) than it is over longer periods of time (i.e., 10 months). Ames et al. (1974) longitudinal results seem to agree with this finding. She concludes that the greater the time interval between testings the less correlation between them. She also concludes that by age eight Rorschach protocols appear to stabilize quite a bit with all but three of 16 scores reaching interage correlations of at least .50. Most of the correlations fall within the .60 and .70 range.

Ames et al. (1974) also present quite strong construct validity data. This is brought out in both general developmental trends and in the age specific trends of many Rorschach scores. These presented trends, are very much in line with an earlier longitudinal study by Levitt & Truamaa

(1972). The developmental trends of major Rorschach scores found by both these studies suggest a conceptual consistency in interpretation and the child's emerging personality organization.

Rorschach results will be presented in two separate fashions. First, each child's results will be presented in protocol fashion. In this way the most frequently tabulated responses will be presented for each testing period (i.e., number of responses, location score percentages, number of determinant and quantitative relationships). Rorschach results will also be presented in accordance with the Developmental Rorschach Rating Scale developed by Mook (1977). The scale consists of nine separate five point scales which assess three broad dimensions of the child's functioning; cognitive integration, emotional and affective integration, and personalization. The Developmental Rorschach Rating Scale offers many positive features for this study. It provides an easier classification system by which the protocols can be scored by independent raters. It also offers a quantifiable system from which the projective material can be compared from testing to testing.

Selection of Subjects

Initially, eight children were chosen to partake in the present study. All eight children were chosen from the population that existed at the Child Study Centre,

University of Ottawa. Each of the children, in turn, had to meet six specific criteria to be included in the study, namely: a definition criterion; a discrepancy criterion; a behavioral criterion; APP criterion; a neurological criterion; and an approval criterion.

1. Definition Criterion: All children had to meet the criteria of definition presented earlier in this thesis.

2. Discrepancy Criterion: A sufficient discrepancy had to exist between the child's learning potential and his actual achievement. For this requirement, Myklebust's (1968) learning quotient was employed. The derivation of the child's learning quotient begins with the establishment of his expectancy age. This is found by using the following formula:

$$\frac{\text{Mental Age} + \text{Life Age} + \text{Grade Age}}{3} = \text{Expectancy Age}$$

In the above formula, mental age is represented by the higher of the child's verbal or performance I.Q. It is felt that such a score is a better indication of the child's potential. Life age is incorporated into the formula as a reflection of physiological maturity. It is represented by the child's age in years and months. Grade age is included in the formula as an indicator of opportunity for formalized learning. Grade age is represented by the theoretical mean age of children within a given grade. For this score, the table in use at the

Ottawa Separate School System based on current grade placement was used.

The child's actual achievement age is then found by averaging achievement tests results, (i.e. instance WRAT reading, spelling and arithmetic and Gates McGinitie vocabulary and comprehension scores), and converting this mean achievement to age norms. This achievement age score is then divided by the expectancy age score yielding the Learning Quotient. A learning quotient of 89 or below is considered learning disabled.

3. Behavioral Criterion: The child must have been judged dyslexic by an objective behavioral rating scale. For this criteria, the Pupil Rating Scale (PRS) (Myklebust, 1971) was used. The scale is a screening device used for the diagnosis of learning disability. It covers five separate areas of behavior (auditory comprehension, spoken language, social orientation, motor coordination, and personal-social behavior), not directly related to academic performance. The child's individual teacher rates the child along these lines and his total score must fall below a specific cut off score. The Myklebust scale was chosen as a screening device for a number of reasons. First, teachers have been found to be extremely accurate predictors of academic performance. Second, the scale has been subjected to a wide range of experimental study and has proven itself

valid and reliable (Bryan & McGrady, 1972; Calligan, 1977; Pihl & Nagy, 1980).

The research is in agreement that a cutoff score of 70 out of 120 on the PRS is the best criteria.

4. APP Criterion: The child had to meet the three-pronged criteria established by Dr. Tomatis for dyslexia; a) a listening test, b) audio-vocal laterality, and c) a semi-structured interview by Dr. Tomatis himself.

a)- The Tomatis Listening Test (TLT)- The TLT is a diagnostic measure used in the Tomatis method to evaluate the subjects listening skills. Tomatis distinguishes this from the subjects hearing skills. As Tomatis defines the task, it is one used to measure the adaptive readiness level of the persons auditory system, rather than the sensorial potential of his hearing mechanism.

To administer the TLT a standard audiometer is used. Both ears are tested for air conduction using headphones and for bone conduction utilizing a mastoid vibrator. Pure tones are presented for the air conduction test, octave by octave beginning with 8000 Hertz (Hz), and proceeding down the spectrum to 6000, 4000, 3000, 2000, 1500, 1000, 750, 500, and 250 Hz. For each tone presented, the procedure begins at the faintest level, -20decibels (db), and varies by plus five db's for every presentation. This continues until the subject indicates (by raising their hand) that the tone has been heard. This procedure is repeated for every tone presented and threshold levels are recorded

standard audiometric grid. Only the subjects earliest perception of the tone is recorded.

For the air conduction portion of the TLT, the right ear is tested first followed by the left. The curve obtained for each ear is presented on the grid as a continuous line with the right ear curve presented on the left side and left ear curve on the right side.

The air conduction portion of the TLT is followed by the bone conduction measurement. As in the air conduction measurement, tones are presented singly from faintest to highest db in increments of +5 db, until recognition is indicated. Unlike the air conduction, the subject is asked to raise the hand that matches the side on which the sound is presented. He is asked to raise both hands if the sound either cannot be localized or is perceived between both ears. If the subject hears the sound on the colateral side of presentation, or if he cannot locate the origin of the sound, a spatialization error is recorded for that particular sound frequency. These "spatialization errors" are located on the grid by the use of letters on the misperceived frequencies. The bone conduction curve is recorded on the grid by using a dotted line (see figure K).

The final aspect of the TLT evaluation is that of auditory selectivity. To accomplish this test, the subject is presented, via the air conduction, two successive tones in descending order (i.e. 8000 and 6000). The subject is

then asked to indicate which of the two tones was of the higher frequency, the first or the second. The right ear is tested first, with each set of two tones presented in descending order (i.e. 8000 and 6000 hz. followed by 6000 and 4000, followed by 4000 and 3000hz, etc.). The ear is determined to be closed within those frequency sets where the correct discrimination is not made. These errors in the subjects auditory discrimination are indicated on the grid by slanted lines within those missed frequency pairs.

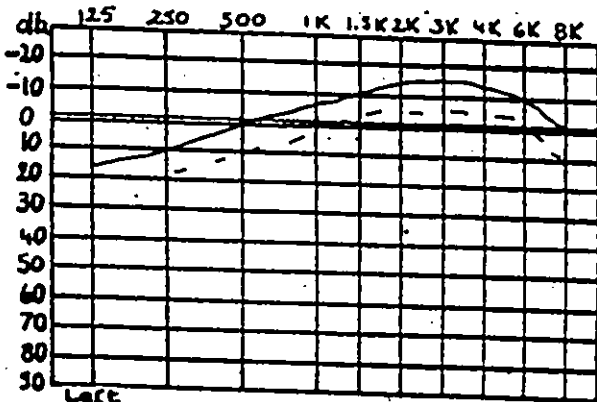
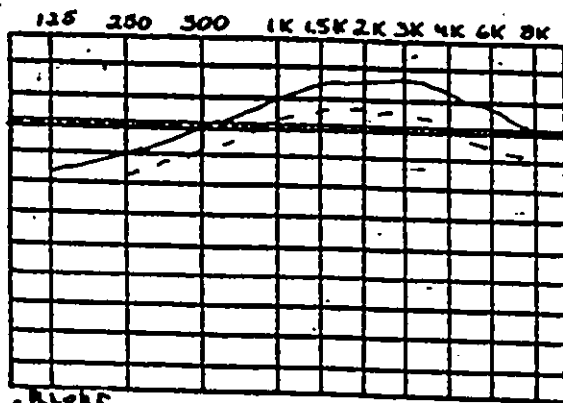
The interpretation of the TLT is a complex and highly speculative diagnostic procedure which will only be outlined briefly here. The reader is referred to Tomatis' writings (Tomatis, 1973) for more detailed descriptions. According to Tomatis, the ideal air conduction curve should ascend from the lower frequencies with a slope of 6 to 18db per octave beginning at +15 or +20 db at 125 hz. The curve should peak between 3000 and 4000hz and taper off between 4000 and 8000hz. The bone conduction curve should follow the same general pattern as the air but reside between 5 and 10db below it. Tomatis calls this the ideal listening curve (see figure J). Tomatis infers from these listening curves various aspects of the subjects psychological functioning. His interpretations range from statements about the nature of the subjects physical and somatic problems to the nature of his personality organization and psychic functioning. As of yet no empirical evidence exists to either support or refute these claims.

b) The Audiolaterometry Test (ALM) - Tomatis believes the ear is a better indicator of lateralization than the traditional measures of distal preference. The audiolaterometer is a device used to measure which ear of the child's functioning is sensorily dominant. The audiolaterometer is a simple two channel amplifier used with a microphone and earphones that feed the child's voice back to his ears. Using this device, it is possible to feed either the same intensity of sound to both ears simultaneously or vary to each ear as preferred.

To begin this test, the ALM is set to send the same intensity of sound to both ears. While the subject responds to verbal questions, the amount of sound intensity is varied downward (by 10db) for the left ear until the examiner perceives changes in the subject's voice, expression, facial features and posture. The examiner is trained to observe these subtleties of change. As an example, if the left ear input has to be reduced twice until these observational changes are noticed, the strength of the left ear domination is calculated at +2. Right ear domination is determined by reversing the procedure.

According to APP theory, the score obtained on this procedure is indicative of both the subject's auditory dominance and his self-listening capacity. The results of this test are recorded on the audiometric sheet in a box next to the ear which shows dominance (figure J).

Date:



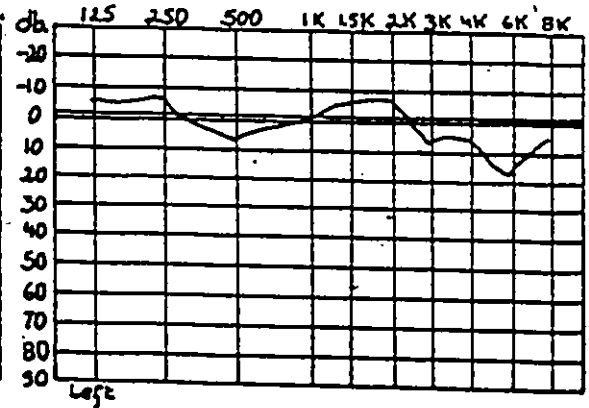
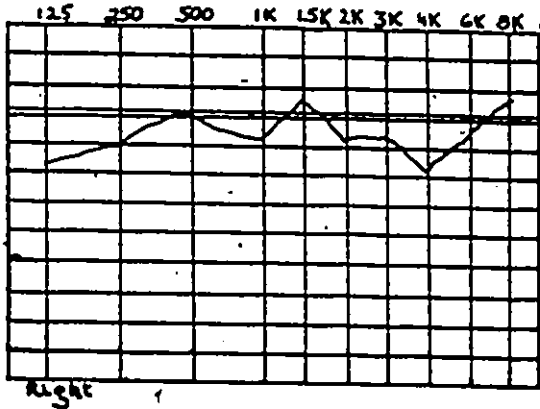
Examiner: J.R.

Key

- Air Conduction Curve
- - - Bone Conduction Curve

Figure J: Tomatis' conception of an ideal listening curve.

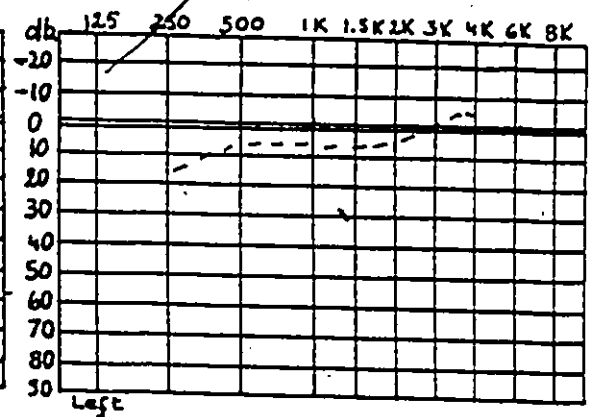
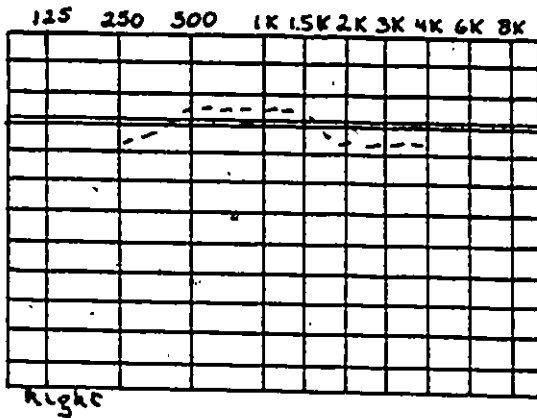
Date:



A

Examiner: _____

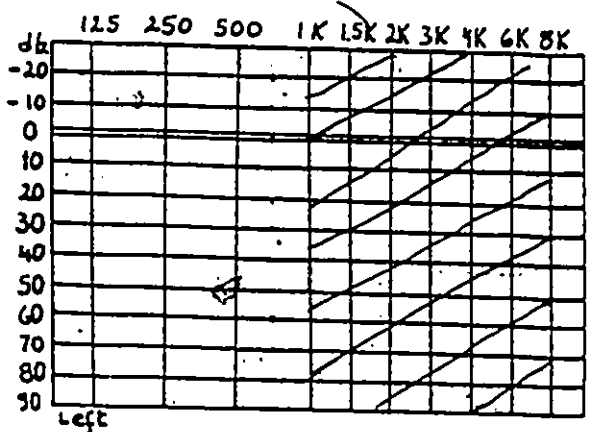
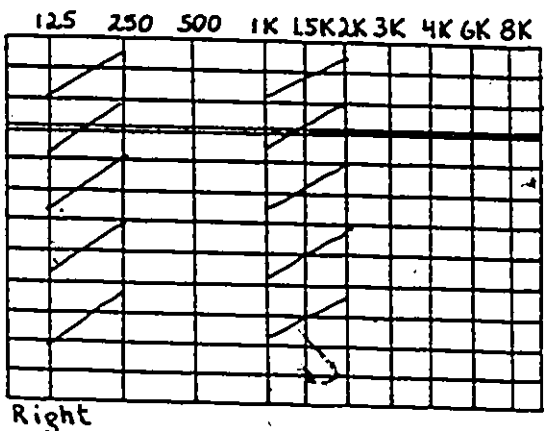
Date:



B

Examiner: _____

Date:



C

Examiner: _____

Key:

- A- Hypothetical Air Curve.
- B- Hypothetical Bone Curve
- C- Hypothetical Selectivity Errors

Figure K: - Different Aspects of the Tomatis Listening Test

(c) Behavioral and Relational Interview: Tomatis conducts this interview in which he observes the child's organismic attitude while he is engaged in both dialogue and as a listener. In the interview process, Dr. Tomatis seeks to determine the child's attitude toward communication. He feels it is possible to identify a dyslexic posture by observing the child in linguistic interaction. During the first stage of the interviewing process, Tomatis evaluates the child as a listening participant. Using facial, postural and motoric cues, the child's involvement, attention and energy level are all judged.

This is followed by the dialogue stage of the interview. Tomatis attempts to gauge the child's hearing attitude by observing how the child handles oral expression. He places heavy emphasis on how the child holds his body during discourse (i.e., tonus of facial muscles, lip movements, distal synkinesias). The difference between the child's listening and speaking attitudes is seen as crucial in this evaluation.

All of the perspective subjects underwent a listening test, an audio-vocal laterality test and an interview session with Dr. Tomatis. Both the threshold evaluation and the selectivity test provide an indication of the child's adaptive listening attitude laterality and spatialization refer to the maturity and effectiveness of the child's neurological organization. Taking all this

information in total, Tomatis judges the extent of the child's dysfunction.

5. Neurological Criteria: All children had to be judged free from gross neurological involvement. For this criteria all were seen and tested by Dr. Trites, a local neuropsychologist in the Ottawa-Hull area.

6. Approval Criterion: Parental approval had to be secured from all the parents of the children involved.

Out of the initial eight children five met all six areas of criteria. The final five children were all boys attending the Child Study Centre's 12 month program. Three of the boys were in the 7 to 8 year range while two were in the 9 to 10 year range. All came from English speaking families, two were in the Child Study Centre residence during the investigative period.

Child #1--Ernest

Background Information

Ernest is the oldest of two children coming from an English speaking, high middle to upper class home. Both of Ernest's parents had gained a high degree of academic success achieving graduate degrees. At the beginning of our project he was 9.5.

Ernest was referred to the Child Study Centre school and residence with a history of learning difficulty. Although he is a fairly bright child with a high potential for academic achievement his difficulty with formalized

education began in kindergarten. In this setting, at age 5, Ernest was described as lacking maturity and not yet ready for first grade. He appeared to crave an enormous amount of attention and direction becoming angry if he was not given a leadership position.

Criterion Results

In relation to the six-pronged criteria outlined, Ernest's criterion results were as follows:

1. Ernest fit the composite definition offered earlier in this thesis. His learning problems were not the result of either retardation, sensory handicap or severe emotional problems. He had sufficient opportunity for education and a specialized setting was chosen to deal with his learning problems.

2. Myklebust Learning Quotient: According to the previously described formulation, Ernest's expectancy age was 10 years, 2 months. His actual achievement age (mean achievement converted to age score via Ottawa Separate School Board norms) was 8 years, 0 months leaving his learning quotient score at .80. This is well below the suggested cutoff score of .89.

3. Pupil Rating Scale (PBRs): Ernest received a rating score of 63 (which is below the accepted cutoff score of 70). This means he fits the behavioral criteria for dyslexia.

4. Audio-Psycho-Phonological Criterion:

(a) Tomatis Listening Test: (see figure A, p.113) The listening test revealed that Ernest was not making adequate use of his listening and language ability. His listening skills were undifferentiated, as evidenced by closed selectivity (right ear was completely closed, left ear was closed from 1000 hz. upwards), as well as flat air conduction curves in the lower frequency levels (curves should ascend). According to Tomatis, proper listening reveals a parallel path for both air and bone conduction curves. In Ernest's case, on both ears, the curves showed little resemblance. On both air curves, there was a gradual dropoff in the higher frequencies (3000-8000 hz). Tomatis views this phenomena as a lack of energizing capacity. Ernest exhibited only one spacialization error (on the left ear at 1000 hz.).

(b) Audiolaterometry: Results of this test showed a small advantage of 1 for the left ear. According to Tomatis' criteria, this is indicative that Ernest's right ear was not his leading ear. (The question of left hemisphere lateralization is thus raised.)

(c) Personal Interview: Ernest's distractability became evident during his interview with Dr. Tomatis. He had difficulty maintaining a steady flow in his conversational speech. Verbally, he was cautious and tentative.

5. Ernest was judged free from any gross neurological involvement in testing by a local neuro-psychologist.
6. Parents consented to remediation via audio-psychophonology.

Child #2--Andrew

Background Information

Andrew was an attractive, fair haired and skinned, stocky child. At the beginning of the baseline period he was 7 years, 9 months old. On first impression, Andrew presents himself as mature, almost adultish in his conversation but serious and lacking animation in expression. He appeared to be more comfortable in the presence of adults than his peer group, tending to shy away from interaction.

Andrew is the second oldest of four children in a fairly comfortable upper middle class family. Both parents achieved professional degrees although mother only worked occasionally. The oldest child in the family, Andrew's senior by one and a half years, presented serious behavioral difficulties eventually leading to residential placement at the Child Study Centre. Both parents appeared genuinely concerned about their children, although they appeared easily overwhelmed by difficult situations in management. Many of their statements appeared contradictory in regards to both their children's behavioral patterns and their management techniques.

Criterion Results

In relation to the six pronged criterion outlined previously, Andrew's criterion results were as follows:

1. Andrew fit the composite definition offered earlier. His learning problems were not the result of either retardation, sensory handicap or severe emotional problems. He was afforded ample opportunity for formalized learning and his disability was judged severe enough that a specialized educational placement was needed.
2. Myklebust Learning Quotient: Andrew's expectancy age came out to 8.4. His achievement age tested out at a 7.4 level, leaving his learning quotient at .86. This is below the cutoff criteria level of .89.
3. Pupil Rating Scale (PERS): Andrew received a rating of 68 which falls below the accepted cutoff score of 70. This indicates that he fits the accepted behavioral criteria for dyslexia.
4. APP Criterion:
 - (a) Listening Test: (see figure B.p155) Andrew's listening test showed many signs of poor listening and communicative ability. First, selectivity was almost completely closed on both ears. (Tomatis views this as indicative of a turned off stance in relation to milieu). Second, both bone conduction curves were flat and well above the air curves (Tomatis indicates that proper auditory functioning will reveal air and bone curves in congruence with the air

slightly higher). Third, spacialization errors existed on both ears (on the right ear at 3000 hz. and on the left at 1000 and 4000 hzs.).

(b) Audiolaterometry: This test showed a 1.5 advantage to the left ear which is indicative of inefficient functioning.

(c) Personal Interview: During the interview with Dr. Tomatis, Andrew exhibited much restless behavior. He tired easily in one to one conversation and there was evidence of motoric synkinesis during his verbal responses. Tomatis interpreted his interview and listening test as showing mixed laterality and a poor body image. His dynamic interpretation of the listening test showed Andrew as having difficulty relating to his mother. He was both fearful and dependent and was uneasy in all social contacts. When this is combined with deficient listing and motoric skills, Dr. Tomatis agreed Andrew was a dyslexic child.

5. Andrew was judged clear of any gross neurological damage by a local neuro-psychologist.

6. Parents consented to remediation via APP.

Child #3—Brian

Background Information

Brian was a stocky child who at the beginning of baseline was 7 years, 11 months. One received the initial impression that he was quite shy around adults, as he would

lower his head when speaking, rarely looking you in the eye. It was also quite evident that his communication skills were poor, as he would fumble over words and had difficulty bringing out his point of view. This situation was quite different when Brian was involved in free play with peers where he would run and shout with seemingly endless energy. In this milieu, he was totally engaged in whatever the group was doing.

Brian is the middle child in a family group of five children. He has only one sister, one year his senior. His father is a physician who between his arduous work schedule and retiring temperament does not spend much time with any of the children. Brian's mother is a full time homemaker who handles the disciplining of all the children. Brian's brother (three years his senior) also had a history of learning problems and according to parents, it was not noticed in school until he was 9 years old.

Criterion Results

1. Brian met all previous criterion listed in the composite definition. His learning problems were not the result of either retardation, sensory handicap or severe emotional problems. He was afforded ample opportunity for formalized learning, and his disability was judged severe enough that a specialized educational placement was needed.

2. Myklebust Learning Quotient: By the formula presented earlier, Brian achieved an expectancy age of 8.7 years and his achievement age was 6.11 years. This yielded a learning quotient of .80 which is well below the cutoff score of .89.

3. Pupil Rating Scale (PBRs): Brian received a global score of 66, this being below the accepted cutoff score of 70 classified him appropriate for this study.

4. APP Criterion:

(a) Listening Test: (see figure C.p193) According to the criteria set by Dr. Tomatis, results of Brian's listening test shows severe difficulty in communication. Selectivity on both ears was fairly closed and bone conduction was consistently above the air curve. Both lower frequency air curves were not ascending and there existed spacialization errors on both ears.

(b) Audiometerometry: Brian's left ear showed an advantage of 1.5 leaving Dr. Tomatis to conclude that auditory laterality was poorly established.

(c) Personal Interview: Dr. Tomatis was struck by a number of features of his talk with Brian. His voice was both monotone and had a low pitch; his speech was very concrete, and in general very passive; and his posture was slumped and apathetic. All these factors led Dr. Tomatis to conclude Brian was severely dyslexic.

5. Brian was judged free from any gross neurological deficits by a local neuro-psychologist.

6. Parents agreed to remediation via APP.

CHILD #4—CHARLES

Background Information

Charles was a thin, fragile looking boy, who at the beginning of the baseline period was 7 years, 9 months old. Initially one gets the impression that Charles preferred his own play to any interchanges with either peers or adults. He was very reticent when one tried to engage him in conversation. On the playground he was very much on the perimeter of activities. He appeared to not know how to approach other children hence his clumsy attempts were usually met with rejection by his classmates (quite often he would try to get attention by instigating or teasing).

Charles was the only child of rurally based parents. They prided themselves on their families self-sufficiency, both socially and economically. He was exposed to few children at home (owing to the families life style) and spent most of his time entertaining himself. Charles' father worked part-time teaching design in the community but spent the major portion of his time at home. As a youngster he too had difficulty learning to read and was told he was dyslexic. Charles' mother carried the major financial and organizational aspects of family functioning.

Both parents prided themselves in their creativity and their self taught skills.

Criterion Results

1. Charles met previously stated criterion for dyslexia. His learning problems were not the result of either retardation, sensory handicap or severe emotional difficulty. He was afforded ample opportunity for formalized learning, and his disability was judged severe enough that a specialized educational placement was needed.

2. Myklebust Learning Quotient: Charles' expectancy age was figured at 8.2 while his achievement score was figured at 6.10. His learning quotient was .85, below the .89 cutoff score.

3. Pupil Rating Scale (PBRS): Charles received a score of 67 out of a total score of 120 which falls below the cutoff score of 70.

4. APP Criterion:

(a) Listening Test Results: (see figure E, p.268) Dr. Tomatis felt that Charles' listening test was positive, indicative of better than expected listening ability. He was drawn to this conclusion by open selectivity, curves that exhibited an ascending slant and only one specialization error.

(b) Audiometerometry: Test results showed a left ear dominance of 2.

(c) Personal Interview: Dr. Tomatis rated Charles' verbal expression and posture both good. He felt Charles was affectively secure but lacked exposure and self-direction. Because of listening test results, audiometerometry and interview he felt Charles was only mildly dyslexic.

5. He was judged free from gross neurological involvement by a local neuro-psychologist.

6. Parents agreed to APP remediation.

Child #5—Darryl

Background Information

Darryl was a tall, black, 9 year old, who was living in the Child Study Centre residence during the research project. He gave one the initial impression of being a very buoyant child, always having a semi-smile on his face. He appeared to feel at ease with most people and got along well with staff and students. On closer observation, it became obvious Darryl had difficulty maintaining his attention on a subject for extended times. Although quite sensitive to his environment, he was also impulsive, leaping whole heartedly into things without thinking. His affect was actually fairly labile switching from laughter to tears quite easily. This was evident in both school and residence and was usually the result of some limit being imposed on his behavior.

Darryl was an adopted child living with his parents since he was 15 months old. His natural parents were

unmarried, and because of familial pressure, his natural mother gave him up for adoption at 13 months. (He spent two months in a foster home). His adoptive family consisted of three older girls, the oldest of which had her own child out of wedlock and was residing with the parents.

Criterion Results

1. Darryl met all the expectations of the previously stated composite definition. His learning problems were not the result of either retardation, sensory handicap or severe emotional difficulty. He was offered ample opportunity for formalized learning and his disability was judged severe enough that a specialized educational placement was needed.

2. Myklebust Learning Quotient: Darryl received an expectancy age of 9.5 years. When his mean achievement of 1.9 years is converted to age his achievement age becomes 7.0. His learning quotient was figured at .77 well below the cutoff of .89.

3. Pupil Behavior Rating Scale (PBRS): Darryl's global PBRS score of 65 places him well below the expected cutoff of 70.

4. APP Criterion:

(a) Tomatis Listening Test: (see figure D, p230) Darryl's listening test showed some positive prognostic signs, the major one being the open selectivity. On the negative side both air and bone conduction on both ears were flat and

spacialization errors existed on both ears. According to Tomatis' theorizing, flat curves are indicative of both undifferentiated listening as well as a failure to properly utilize incoming flow of energy.

(b) Audiometerometry: Darryl scored a +2 left ear advantage.

(c) Personal Interview: Dr. Tomatis was struck by Darryl's restless nature and his flat voice. He felt that auditory lateralization would help in increasing his self-awareness. From all the information, Dr. Tomatis considered Darryl dyslexic.

5. Darryl was judged clear of any gross neurological damage by a local neuro-psychologist.

6. Darryl's parents agreed to remediation via APP.

Procedure

Out of the initial eight children chosen from the population at the Child Study Centre only five met all the specific criterion to be included in the study. One was eliminated for failing to meet the discrepancy criterion, one did not meet the neurological criterion and one did not meet the emotional criterion. These five children received one hour per day of APP at regularly scheduled times. It should be noted that all children in the Child Study Centre School were involved in individualized education and planning. Most received varying forms of co-curricular activities, including: music and art therapy, psycho-motor

training, individualized reading, APP training and various forms of psychotherapeutic involvement. The human contact that these children received was not in excess of most of the CSC population.

As previously mentioned in the theoretical portion of this thesis the audio-psycho-phonology remedial program is a three step process: (a) passive listening (filtered sounds), (b) active performing, and (c) training.

1. Passive Listening (filtered sounds): The goal of this first stage in the re-education of the dyslexic child is a reawakening of the desire for communication within his relational environment. This is accomplished by sonically simulating his pre-natal environment through filtering his maternal voice. Remedial sessions during all three stages of audio-psycho-phonology lasted one hour a day (five days a week). During this first stage the child listens to a half hour tape of filtered maternal voice and a half hour of filtered high frequency music. (Adopted children as well as children with maternal voices too low to be filtered listen to one hour of music) ✓

Progress during this stage is monitored after every 30 sessions via audio-metrics. The decision that the child is ready to proceed to stage 2 (active performing) is determined by positive change in threshold levels and the opening of selectivity on the listening test. With the opening of selectivity the child proceeds to the sonic

birth substage which entails a gradual lowering of the maternal voice until the child can identify it. .

2. The Performance Stage: This stage is marked by more "active" participation by the child in the remedial process. The hour remedial sessions are broken down into half hour listening to filtered high frequency music and half hour repeating (with immediate feedback via headphones) of sibilant tapes. The sibilant tapes are broken down into progressively filtered sessions. The child will begin with the least filtered tape and progress daily upwards. Progress is recorded and monitored via audiometrics.

3. The Final Training Stage: During this stage the child listens to alternating sessions of: (a) filtered music, (b) Gregorian chanting, and (c) reading (reading is not a tape per se but the child reads into the electronic ear receiving immediate feedback from his auditory-articulation loop).

For the five children involved in the re-education there were four professionals involved in the remedial programming (three Ph.D students and one technician--all will be referred to as program assistants). The children were randomly assigned to one of the four program assistants. Each program assistant was responsible for instituting the specific program for each child and monitoring behavioral progress. The group of four met once

a week to discuss any issues that were brought up (i.e., parental complaints, behavioral changes, audiometric change and program alterations).

The battery of psycho-social/personality measures was presented to each child in a one-to-one testing situation (the only exception to this was administration of CPQ which was presented in a group situation). The average testing session lasted approximately one hour and were done at prearranged times during the school day. All tests were administered by the investigator.

The CBRS was filled out by teachers and parents twice during the baseline period and every two months thereafter. The child's teacher was asked to fill out three of the adjustment areas (social adjustment, self-adjustment, and school adjustment). Parents were asked to fill out the scale together and scored only two adjustment areas (social adjustment and self-adjustment).

The Inferred Self Concept Scale was filled out by the child's teacher twice during the baseline period and every two months thereafter.

The SEI was administered twice during the baseline period and at two month intervals thereafter. Because of the poor reading and concentrative skills of the subjects the statements were read to the child and he answered "like me" or "unlike me".

Administration of the Rosenzweig Picture-Frustration test was also altered because of reading levels. Statements were read to the child and his responses recorded by the examiner. The Rosenzweig was administered to all children twice during the baseline and at two month intervals thereafter. It was initially scored by two independent scorers, both with experience using the test, according to the outline presented in the scoring manual (Rosenzweig et al., 1948). The discrepant scores were then given to a third scorer to decide the correct score in relation to the response.

The CPQ was administered to all five children in a group, twice during the baseline period, once five months into remediation, once at the end of remediation and then at the end of the followup period. Questions were read to the children and they separately filled out the scoring sheets. Questions measuring factor B (intelligence) were not given.

The Rorschach was administered to all children individually according to instructions suggested by Klopfer (1956). It was administered to all children twice during the baseline, once five months into the study, at the end of the APP intervention and at the end of the followup period. The Rorschach was scored in accordance with the Developmental Rorschach Rating Scale developed by Mook

(1977). It was scored by two independent raters with Dr. Mook deciding all discrepant scores.

In summary, out of the eight initial children, only five met all six criterion for inclusion in this research. Each of these five children was subjected to a 10 month APP remedial intervention with a two month baseline period and a two month followup. Besides being tested for academic improvement during this period, each child received a series of psycho-social/personality measures to judge what effect the remedial process had on specific identified variables. The following chapter, Presentation of Results is organized around the four research expectations. Each child's results will be presented individually in the following order: brief outline of individualized APP program; criterion results; how significant others view the child; how the child views himself; the child's personality traits and dynamic organization; and finally a summary of psycho-social results. At the end of the results, section, an overall summary will be presented.

Table I
Academic and Criterion Score for all Five
Boys at the Beginning of Baseline
Child

	Ernest	Andrew	Brian	Charles	Darryl
Age	9.5	7.9	7.11	7.9	9.3
WISC-R					
Verbal IQ	102	109	101	112	108
Performance IQ	131	123	131	114	111
Full Scale IQ	118	118	117	114	110
WRAT					
Reading	2.8	2.1	1.9	1.7	1.8
Spelling	2.2	1.6	1.3	1.4	1.8
Arithmetic	3.9	2.2	2.2	1.9	2.6
Gater-McGinitie					
Vocabulary	3.5	2.6	1.9	2.0	1.9
Comprehension	2.8	1.7	1.5	1.5	1.4
Composite					
Academic Index	2.9	2.0	1.8	1.7	1.9
PBRs					
Verbal	23	29	23	31	23
Non-Verbal	40	39	43	36	42
Total	63	68	66	67	65
Learning					
Quotient	80	86	80	85	77

a All scores are in grade equivalents by year and month

b Total PBRs score is out of a possible 120 with 70 being the accepted cutoff for learning disabilities.

c The learning quotient cutoff score for learning disabilities is 89.

Table II
Testing Schedule for Each Child

Test	Baseline Period				Remedial Period				Followup Period
	12/75	2/76	4/76	6/76	7/76	8/76	10/76	12/76	2/77
Academic Tests									
WRAT	X	X	X	X		X	X	X	X
Gates	X	X	X	X		X	X	X	X
Psycho-Social Personality Tests									
Rorschach	X	X			X			X	X
Rosenzweig	X	X	X	X		X	X	X	X
SEI	X	X	X	X		X	X	X	X
CPQ	X	X			X			X	X
Inferred Self Concept	X	X	X	X		X	X	X	X
CBRS									
Teachers	X	X	X	X		X	X	X	X
Parents	X		X	X	X		X	X	X

Chapter III

Presentation of Results

This section will be organized around the four stated research expectations. Results will be presented individually for each of the five children who participated in this study. After a brief outline of the APP program and the criterion and academic results, the four areas under study will be presented. These areas, which are generalizations and corresponding to the four specific research expectations, are as follows: how significant others view the child (research expectation #1); how the child views himself (research expectation #2); how the child copes with frustrations (research expectation #3); and, the child's dynamic personality organization (research expectation #4).

Because various tests utilized different measurement intervals, it was decided, to convert these measures to a standard interval scale, with a range from 0-100, and a norm of 50. Therefore, many of the presented figures will have two vertical axes. The first represents the original testing interval, and the second represents the standard interval.

For the afore mentioned standard scale, the following definitions of change were decided upon:

1. Stability-two successive points on the horizontal axis will be considered stable if a minimal change of 0-5 units on the vertical axis has occurred.

2. Small Change-a small change would be considered to have

occurred, if the change between two successive points on the horizontal axis was between 5 & 10 units on the vertical axis.

3. Moderate Change—a moderate change would be considered to have occurred, if the change between 2 successive points on the horizontal axis, was between 10 & 20 units on the vertical axis.

4. Marked Change—if a change of 20 units or more on the vertical axis occurred, between two successive points on the horizontal axis, a marked change was considered to have taken place.

5. A Spurt—a spurt will have occurred if a small, moderate or marked increase then decrease in slope within three successive assessments has taken place.

6. A Dip—a dip has occurred if a small, moderate or marked decrease then increase in slope within three successive assessments has taken place.

7. Variable—the slope of a line will be considered variable if it exhibits small, moderate or marked changes on the vertical axis, accompanied by either alternating spurts or dips over the majority of the horizontal axis.

Results will also be viewed visually for trend analysis (see figure F) as follows:

1. Change in trend—if the slope of the line on the horizontal axis exhibits a different trend during intervention than was evident during baseline, a change in trend is assumed. If baseline trend rises and intervention trend exhibits a general downward slope, then a negative remedial effect is assumed. If baseline slope is descending and the intervention slope shows a general upward slope, then a positive intervention effect is assumed.

2. Change in level-if baseline scores exhibit stability, and intervention scores rise or fall below that level by the end of remediation, then the slope has exhibited a change in level.

3. Change in level of trend-if over the remedial period, the same trend is exhibited as during the baseline period, but that trend is either at a substantially higher or lower level, then a change in level of trend is assumed to have occurred.

In summary, each child's individual presentation will consist of four separate sections, each of which will be concluded by the research expectation pertinent to that section. Each child's presentation will be summarized by the general research expectation, which will follow the four sections.

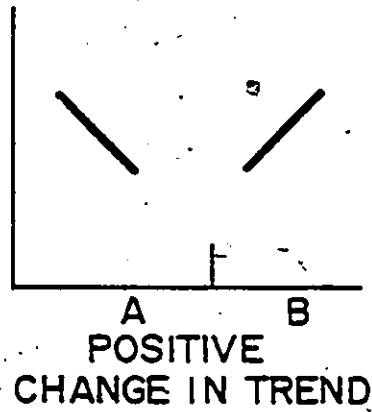
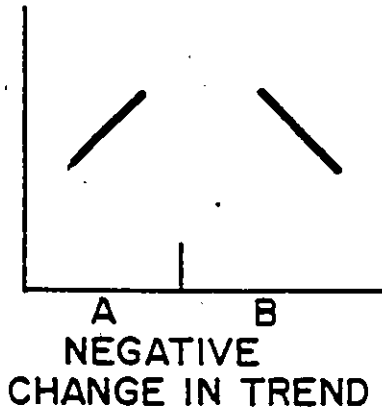
Results will be presented on a standard interval scale with change on that scale defined by a small, moderate or marked variation. Visual trend analysis consisting of three different types, will also be commented on when deemed pertinent.

Child #1-Ernest

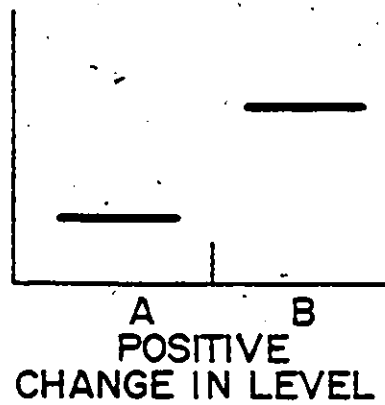
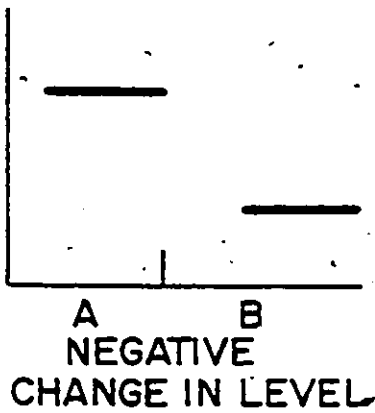
APP Remedial Programming

As already mentioned, the APP remedial program consists of three phases; the passive phase, the performing stage and the training stage. As recommended by Dr. Tomatis, the passive phase of filtered sounds took up the most time in Ernest's remedial programming. It consisted of 120 half hour sessions, the majority of which was the filtered mother's voice (the first 10 sessions was filtered music). This period lasted from the beginning of intervention in early February until the middle of May. At that

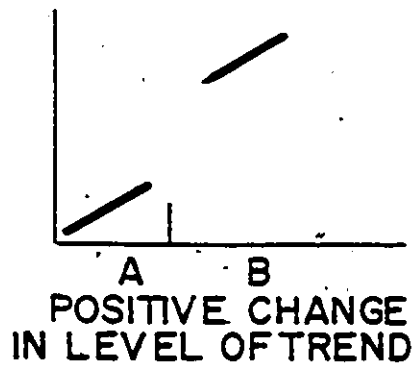
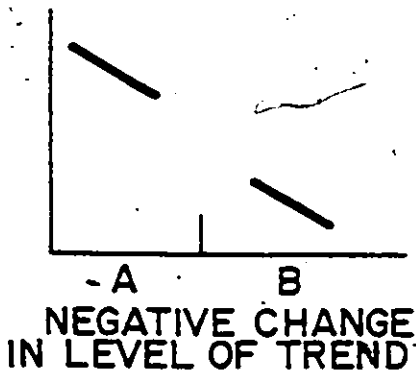
CHANGE IN TREND



CHANGE IN LEVEL



CHANGE IN LEVEL OF TREND



"KEY"
A- BASELINE
B- INTERVENTION

FIGURE F: VISUAL TREND ANALYSIS.

time it was deemed appropriate to begin the sonic birth subphase. (This decision is determined by the listening test results. Sonic birth is usually initiated with the opening of selectivity). The sonic birth was accomplished in one session as Ernest easily recognized his unfiltered mother's voice.

The performing stage was introduced and Ernest spent 70 half hour sessions in practicing articulation exercises on progressively filtered tapes. This phase of remediation lasted for two months from mid May to mid July.

The training phase began in mid July and lasted until the end of the intervention phase in late November. It involved 115 alternating sessions of reading and filtered music. Gradual termination began in October, when the five day a week sessions were reduced to three days a week.

Criterion Results

Before the beginning of remediation, Ernest's learning quotient was 80, nine points below the cutoff for learning disability. After APP remediation, this score rose to 87. Although this is still suggestive of a learning disability, the rise in score would suggest a lessening of severity.

Behaviorally, the Pupil Rating Scale showed a rise over remediation above the cutoff score for learning disability. Before remediation, Ernest's rating on this scale was 65. After the APP re-education, his score rose above the cutoff score of 70 to 72. For this criteria, Ernest would no longer be considered learning disabled.

Table #3
Ernest's Academic Testing Results for
Baseline, APP and Followup Periods

Test	Scoring Periods								
	Baseline Period		APP Remedial Period			Followup Period			
	12/75	2/76	4/76	6/76	8/76	10/76	12/76	2/77	
W.I.S.C.-R.									
Verbal I.Q.	102						115		
Performance I.Q.	131						136		
Full Scale I.Q.	118						128		
W.R.A.T.									
Reading	2.8	2.7	3.0	3.8	4.1	4.6	5.6	5.7 ^a	
Spelling	2.2	2.7	2.3	2.7	3.5	3.5	3.5	3.7	
Arithmetic	3.9	3.9	4.5	5.0	5.0	4.5	4.7	4.7	
Gates-McGinitie									
Vocabulary	3.5	3.7	4.4	4.3	4.6	3.9	4.7	5.8	
Comprehension	2.8	3.4	4.7	3.6	3.4	4.1	5.4	4.4	
Composite Academic Index	2.9	3.1	3.6	3.7	3.9	4.0	4.5	4.6	
P.B.R.S.									
Verbal	23	24					28		
Non-Verbal	40	41					44		
Total	63	65					72 ^b		
Learning Quotient	.80								.87 ^c

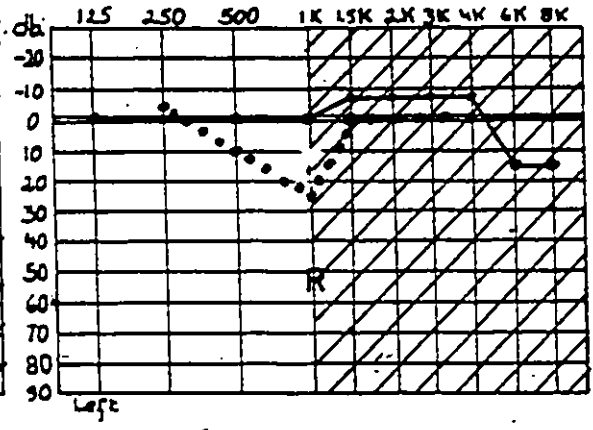
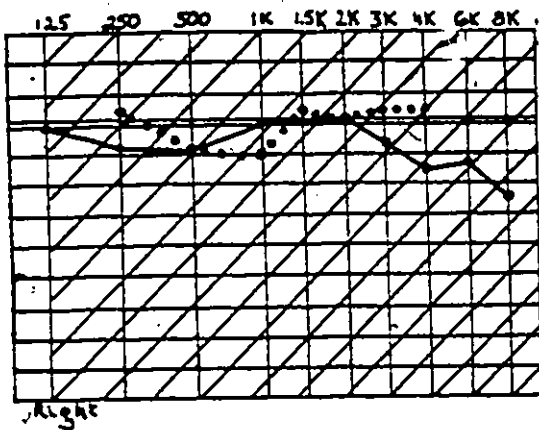
^aAll scores are in grade equivalents by year and month.

^bHighest score is out of 120, with 70 being the cutoff for Learning Disability.

^cCutoff score for Learning Disability is .89.

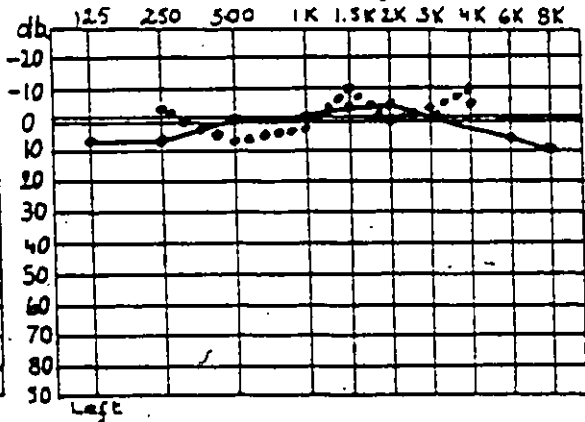
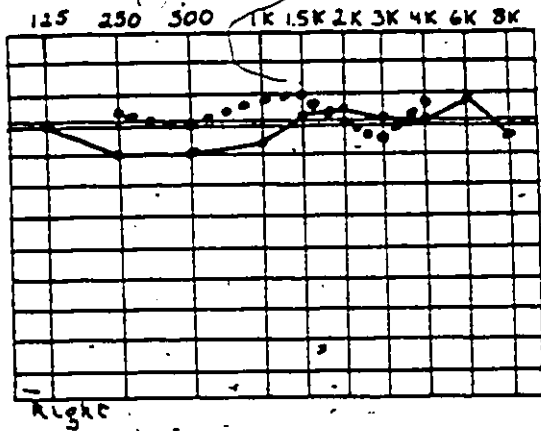
Date: BASELINE TESTING

113



Examiner: _____

Date: FOLLOW-UP TESTING



Examiner: _____



DIAGONAL LINES ARE INDICATIVE OF THOSE FREQUENCIES WHERE AUDITORY SELECTIVITY WAS CLOSED, AS MEASURED BY AUDITORY DISCRIMINATION (TOMATIS 1978)



THE NUMBER WITHIN SIDE THE BOX INDICATES THE STRENGTH OF AUDIOLATEROMETRY (TOMATIS LATERALIZATION TEST)

R-L-M

A LETTER WITHIN GRAPH INDICATES SPECIALIZATION ERROR



BONE CONDUCTION CURVE



AIR CONDUCTION CURVE

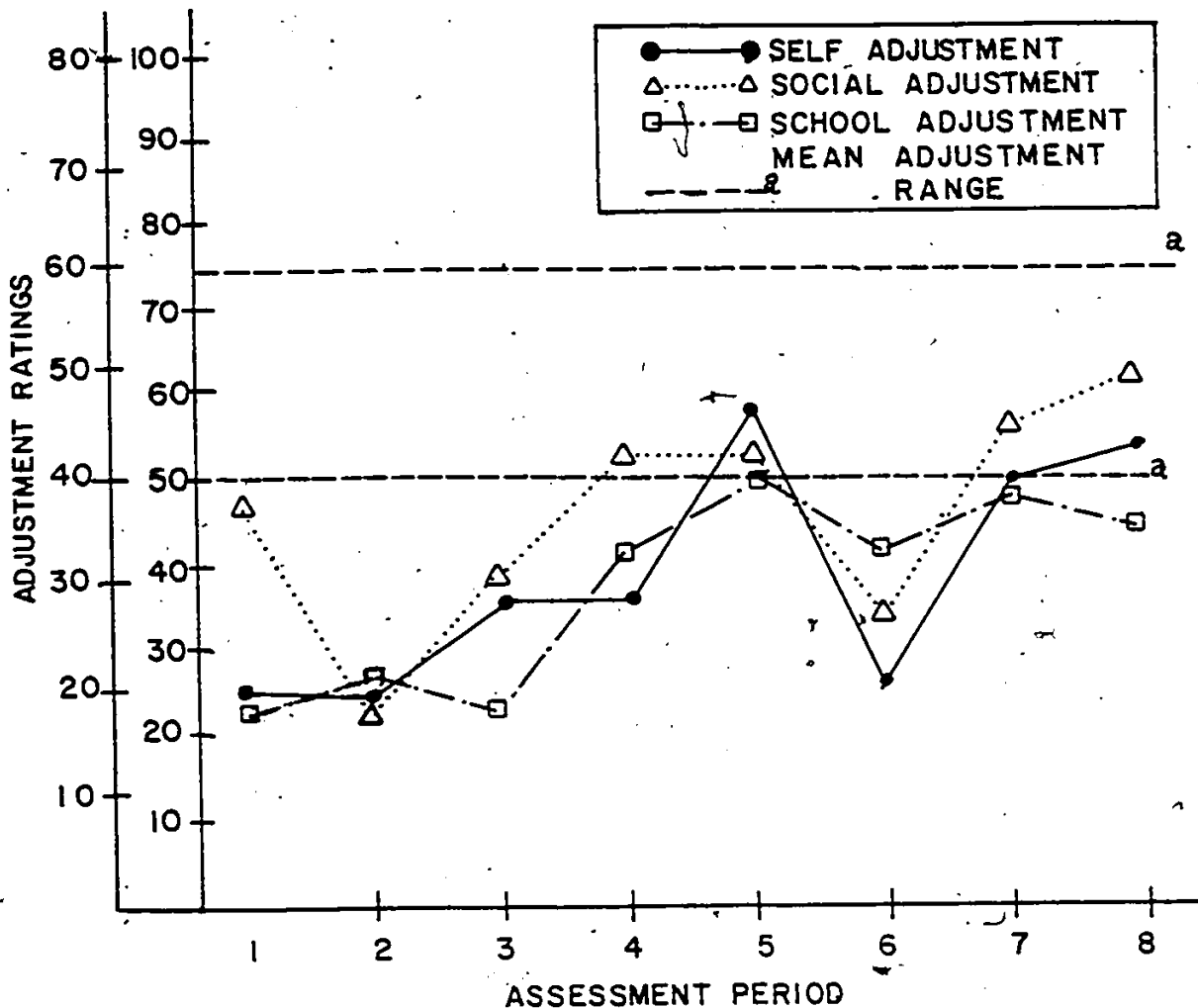
FIGURE -A-TOMATIS LISTENING TEST - CHILD ERNEST.

Ernest's audiometric and laterality results over the course of remediation are quite positive (see figure A). Selectivity opened, and he lost his only spacialization error. Ernest's air conduction curve rose in the higher frequencies, which Tomatis ascribes to a more efficient energizing use of his ability. Before the remedial process, audiolaterometry showed a slight advantage of 1 for his left ear. After APP Ernest showed a strong right ear advantage of 2.5.

In looking at Ernest's composite academic index, it can be seen that he gained 1 year and 4 months over the 10 month intervention. Over the baseline period this score also rose but only by two months. This would indicate a change in level of trend over the remedial period. Over the two month follow-up period this index rose by only one month possibly indicative of a slowdown in his progress.

How significant others view the child

Figure 1 represents Ernest's adjustment ratings as seen by his teacher. After remaining stable during the baseline period (quite a bit below the average adjustment range,) Ernest's self adjustment rating showed a moderate rise after two months of intervention. It then spurted between the fourth and sixth assessment periods, reaching the average range by period 5. It then showed a marked rise by period 7, the end of the APP remediation phase, returning to the lower end of the average adjustment range, Ernest's rating remained fairly stable over the followup period, showing only a minimal gain. In comparison to the baseline period, this scale



KEY

- BASELINE PERIOD
- 1 DECEMBER 1976
- 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976
- FOLLOW-UP PERIOD
- 8 FEBRUARY 1977

FIGURE 1: ERNEST'S ADJUSTMENT RATINGS ON THE CHILD BEHAVIOR RATING SCALE AS MEASURED BY HIS TEACHER.

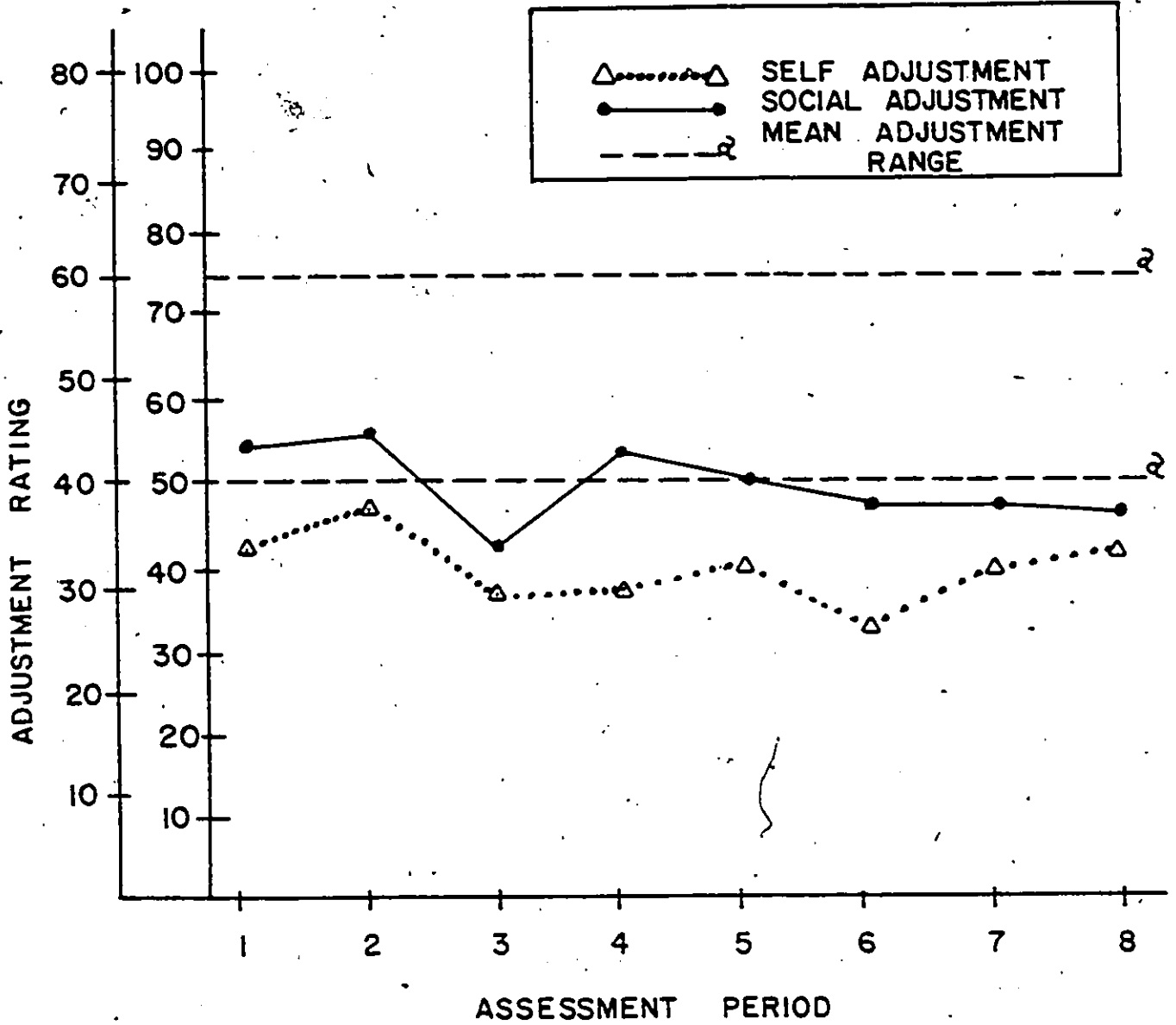
exhibited a marked change in level over the intervention and followup periods.

Ernest's school adjustment scale remained fairly stable, quite a bit below the average adjustment range, over the first three assessment periods. It then showed a marked rise over the next two scoring periods, reaching the average range. This adjustment score exhibited a small dip between periods 5 and 7 ending the intervention period just below the average range. Over the followup period, this adjustment scale showed a small decline. In comparison to the baseline period, Ernest's school adjustment exhibited a change in level over the intervention period.

Unlike the above two adjustment scales, Ernest's social adjustment rating showed a marked decline during the baseline period, falling from just below the average range. It rebounded to within the average adjustment range by the fourth assessment period. This adjustment rating also showed a moderate dip between periods 5 and 7, but rose to within the average adjustment range by the end of intervention and into the followup period.

It is interesting to note that all three adjustment scales showed a dip during the sixth assessment period. This period corresponds roughly to two events that might have affected this rating. First, Ernest had a new teacher during this time. Although she was familiar with him, this might have added to the decline. Second, Ernest left the Child Study Centre residence during this time. This change might also have been part of the decline.

Figure 2 represents Ernest's parental rating of his self and



KEY

- BASELINE PERIOD**
- 1 DECEMBER 1976
- 2 FEBRUARY 1976
- APP REMEDIAL PERIOD**
- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976
- FOLLOW-UP PERIOD**
- 8 FEBRUARY 1977

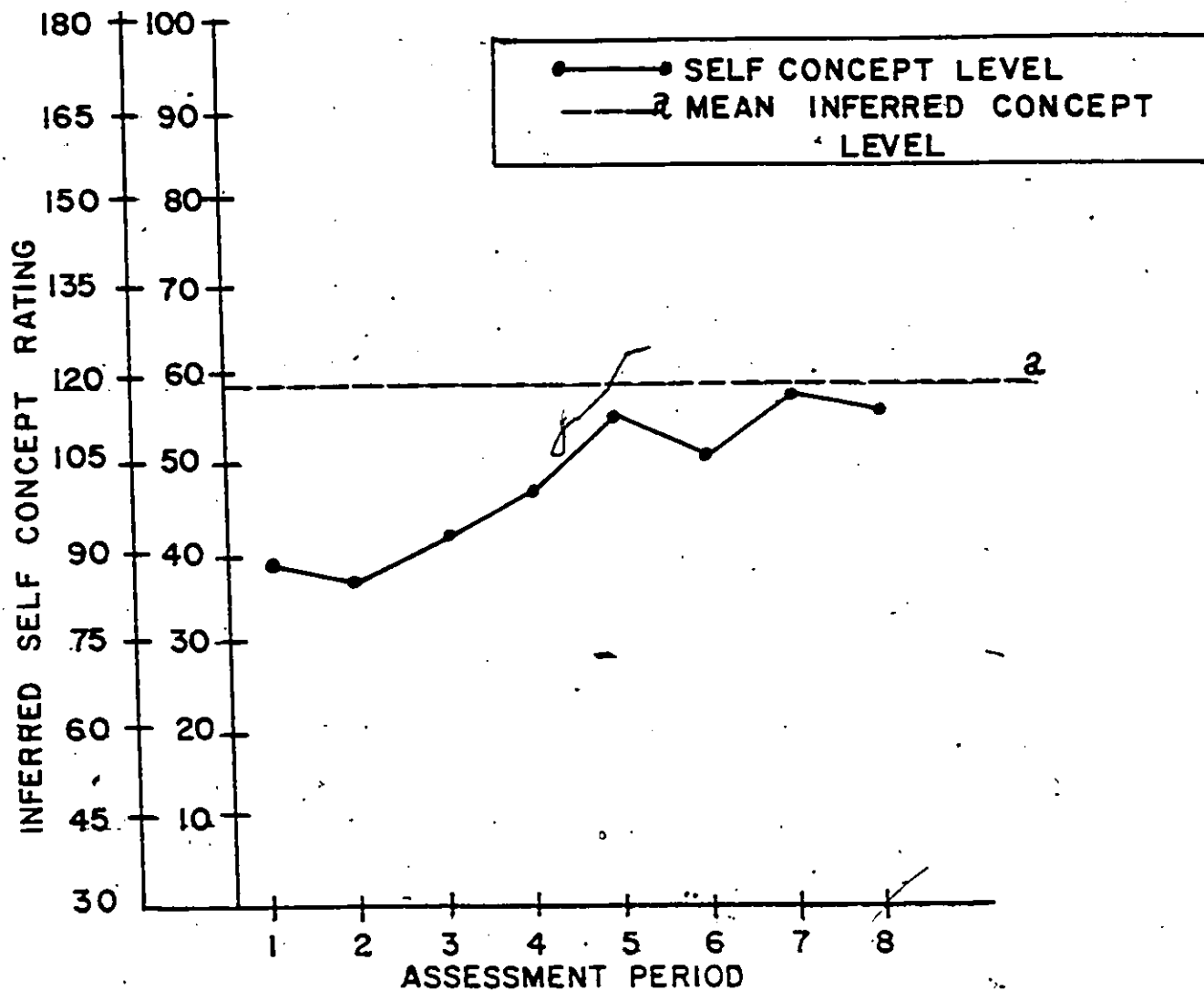
FIGURE 2: ERNEST'S ADJUSTMENT RATINGS ON THE CHILD BEHAVIOR RATING SCALE AS MEASURED BY HIS PARENTS.

his self adjustment as being fairly stable, within the low average range. This was followed by a moderate dip in slope between assessment periods 2 and 4, and a small decline until period 6, when the score levelled off. It remained fairly stable, slightly below the average range, until the end of the study. This adjustment score showed a small downward change in level over the remedial period.

Ernest's social adjustment, as rated by his parents, exhibited a small rise during the baseline period, almost reaching the average adjustment range, but fell moderately during the first two months of intervention. This rating remained fairly stable until there was a small dip between the 5th, and 7th assessment period. This score remained fairly stable during the followup period.

It is interesting to note the discrepancy in rating, especially at the beginning of the study, between Ernest's teacher's evaluation of his adjustment and his parents evaluation, using the same scale. Whereas his parents noticed a small downward trend for both areas, his teacher saw fairly dramatic improvement, especially in the self and school adjustment areas.

Teacher ratings of Ernest's inferred self concept (see figure 3), remained stable during baseline well below the mean score for his age, exhibiting only a minimal downward trend. This rating showed a marked rise by assessment period 5, then dipped between periods 5 and 7, reaching to just below the means score by the end of intervention. It remained stable over the following period, falling off only minimally.



KEY

- BASELINE PERIOD
 - 1 DECEMBER 1975
 - 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
 - 3 APRIL 1976
 - 4 JUNE 1976
 - 5 AUGUST 1976
 - 6 OCTOBER 1976
 - 7 DECEMBER 1976
- FOLLOW-UP PERIOD
 - 8 FEBRUARY 1977

FIGURE 3: ERNEST'S INFERRED SELF CONCEPT AS MEASURED BY THE INFERRED SELF CONCEPT SCALE.

The first specific research expectation hypothesizes an upward change in the way significant others view the child's adjustment.

On the CBRS, teachers saw a marked improvement in Ernest's adjustment in at least two areas of functioning (self, and school). Because of baseline trends, the improvement in these areas appear related to the intervention. Both of these scales almost reached to with the average range by the end of the intervention. The self adjustment scale continued rising over the followup period. In the area of self adjustment, his teacher appeared to notice a maturing in Ernest's emotional control. During the baseline period, Ernest exhibited many signs of what Stott (1971) called the inconsequential child. He was extremely moody, often crying for no reason, and gave one the impression of being a defeated child. The major change over the intervention, appears to have been a reversal of this attitude toward one of more confidence and buoyancy.

In the area of school adjustment, Ernest's ratings during baseline appear to indicate an attention and motivational deficit (i.e.-trouble keeping his mind on work, extreme variability in performance, and a major problem in self expression). The upward change in these areas was quite dramatic over the remedial period. His ratings suggest an improvement in both energy level and in his ability to maintain task appropriate behaviors for longer periods of time.

The extreme variability in the ratings of Ernest's social adjustment over the baseline period could be indicative of his emotional immaturity and moodiness. According to the ratings, the swing within this period was related to his peer interaction

patterns. He could become overtly aggressive when things didn't go his way, which would result in rejection by classmates. Ernest would compensate for this by playing with younger children with whom he was more dominant. During the remedial period, his social adjustment rating rose to within the average range. Ratings suggest that his behavior was becoming both more age appropriate and more acceptable to his peers. This facilitated his making more friends and keeping the friends he had. His rating also points to a gain in his status within his peer group. This gain was improbable during the baseline period, for Ernest could not remain within his group for long enough stretches of time. His social adjustment rating continued showing improvement over the followup period.

The overall improvement seen by Ernest's teachers in his social and self adjustment are in direct contrast to his mother's rating of these same areas.

The decline in ratings by parents of Ernest's self adjustment over the remedial period was linked to his mother seeing him as sulking, getting more nervous and excited about things and having less acceptable personal values. She also saw his behavior as being more cyclic in nature. Ratings did improve as far as Ernest's sociability was concerned, as well as him having a thicker skin in his interactions.

Socially, Ernest's Mother also noticed a slight improvement in Ernest's socially acceptable behavior with peers, but this was offset by his inability to keep friends, his declining abilities to be agreeable in conversation, and his "show-off" type behavior.

Many questions are raised by the seemingly inconsistent ratings of mother and teacher. The literature, in general, suggests that the familial environment of the dyslexic child fosters many of his behavioral patterns and that often relationships become enmeshed (Hall 1956, Athey 1966). A change in the child's behavior, even if it is seen as positive by others, might be viewed negatively by his family. When viewed in this light, mother's self and social adjustment ratings become more understandable in comparison to teachers views. Ernest became more self initiating. This could be upsetting at home, prompting a rating reflecting his less acceptable personal values and his being less agreeable to familial positions in conversation.

Results of Ernest's inferred self concept as rated by his teachers also showed a fairly strong improvement over the remedial period. This rating suggests that Ernest was becoming better able to judge the effectiveness of his interactions and subsequently exhibiting more group oriented behavior. The major changes in teacher rating appear to focus on Ernest's being less fearful of activities, more willing to state his opinion and carry through with his own ideas (i.e. independence) and more objective in regards to his own faults (i.e. ready to accept rightful blame). These results are very much in line with the teacher rated CBRS.

The literature (Bryan 1974, 1974a; Jackson, 1944; Kronick 1976) points to the dyslexic child's erroneous conceptions of his environment, possibly due to inaccurate social feedback. It is this general area, that the teacher ratings indicate improvement for Ernest. He appeared better able to assess his behavior in relation

to his peers and, thereby, approach interpersonal situations with more self confidence. The relationship between this social facility and academic motivations appears quite strong.

In summary, the specific research expectation which hypothethized a positive change in the way significant others view the child's self and social adjustment is confirmed with reservation. The issue of maternal objectivity in behavioral measurement remains the complicating factor.

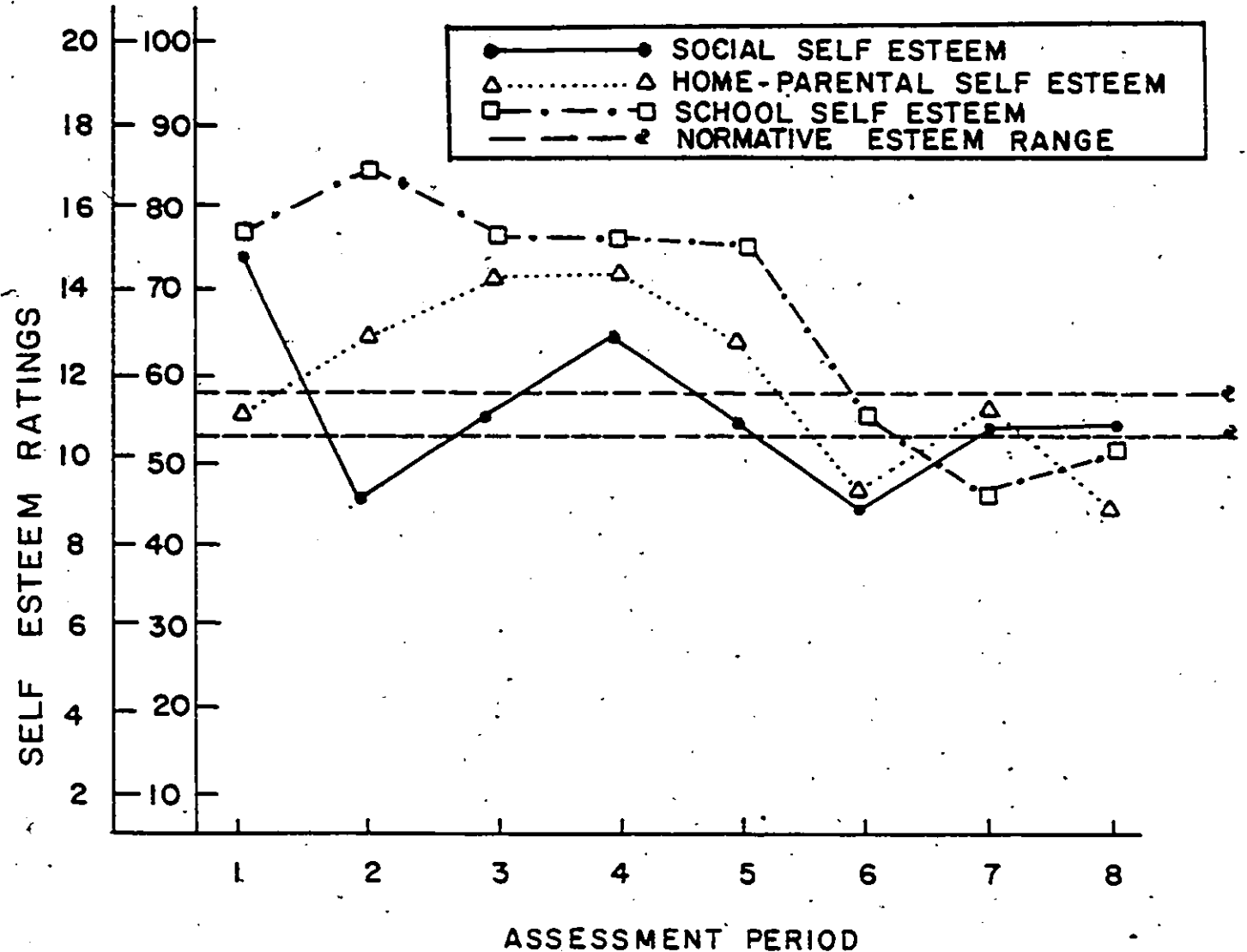
How the child views himself

All of Ernest's scores on the Self Esteem Inventory showed at least moderate variability during the baseline period. During the first assessment period all of his esteem scores, except for his home-parental self esteem, were at least one standard deviation above the mean range.

Ernest's social self esteem (see figure 4) fell markedly during the baseline period to below the average range. It then showed two periods of moderate increase, followed by two periods of moderate decrease. Between assessment periods 6 and 7 it rose to within the average range, and stayed at that level over the followup period.

Ernest's school self esteem showed a moderate spurt over the first three assessment periods. After remaining stable for two periods, it exhibited a marked decline to within the average range by assessment priod 6. Between periods 6 and 8, this esteem level showed a moderate dip, finishing the study at a low average level.

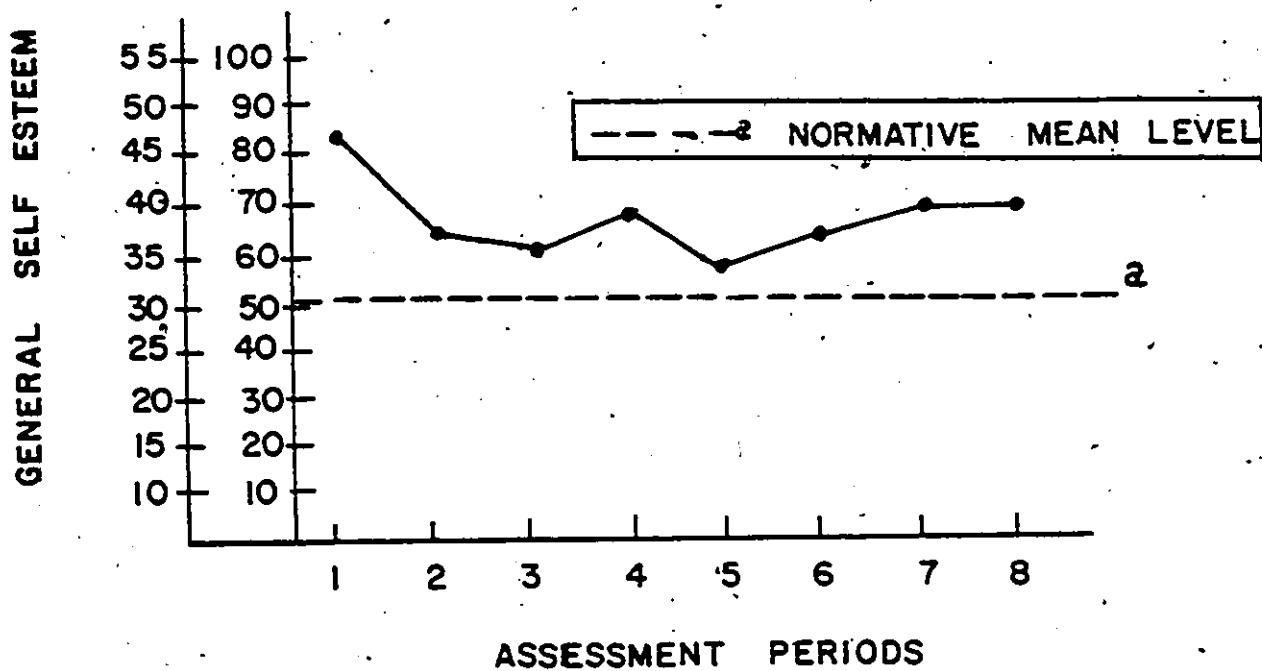
Unlike the preceeding two scores, Ernest's home-parental esteem began within the average range, and exhibited a marked rise over the first three assessment periods. After stabilizing at this level for



KEY

- BASELINE PERIOD
- 1 DECEMBER 1975
- 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976
- FOLLOW - UP PERIOD
- 8 FEBRUARY 1977

FIGURE 4: ERNEST'S SPECIFIC SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

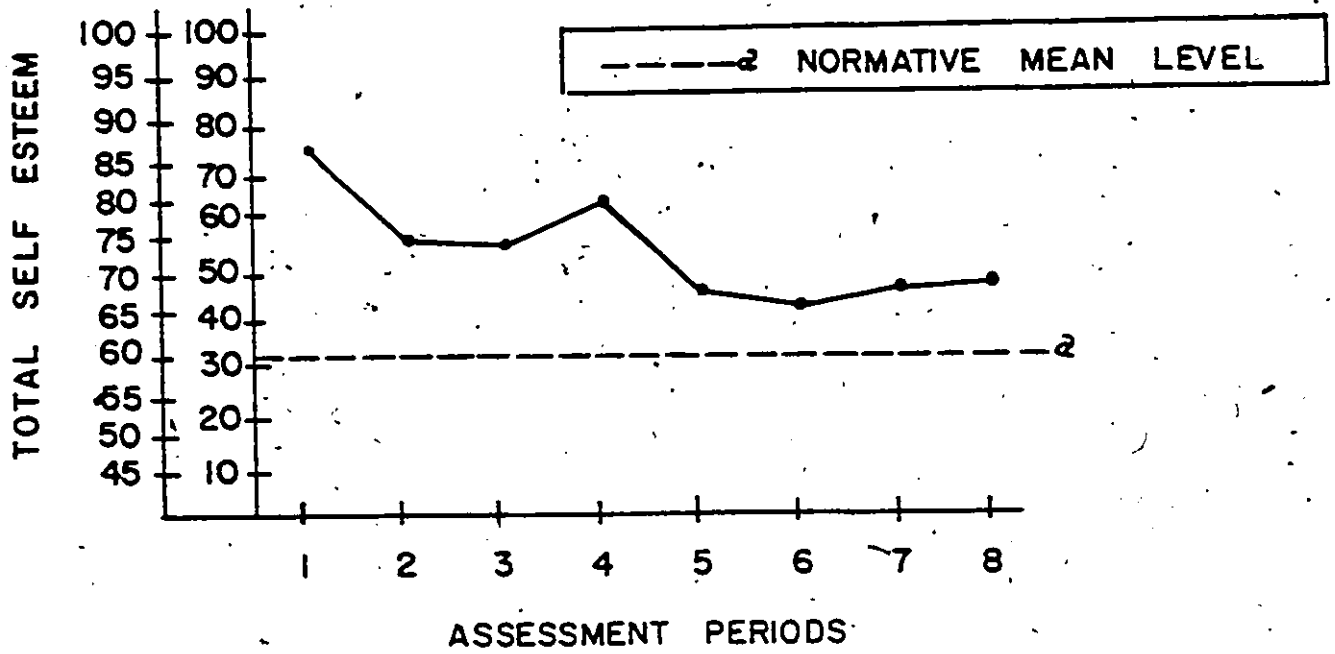
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 5: ERNEST'S SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 6: ERNEST'S SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.

two months, it fell to below the mean range by assessment period 6. It then spurted over the final three assessment periods, ending the study below the mean range.

In general, then, Ernest's school self esteem showed a downward change in level of trend between baseline and followup periods. His home-parental esteem exhibited a slight and unstable change in trend over the remediation. The extreme baseline variability in his social self esteem score contaminates any possible intervention effects.

Ernest's general self esteem (see figure 5) showed a marked decline during the baseline period. This was followed by two small dips, leaving its assessment level period 6, the same as assessment period 2. It then exhibited a small rise over the last two months of intervention, and remained stable over the followup period.

Ernest's total self esteem showed a marked decline during the baseline period (see figure 6). After remaining stable for two months, it showed a small increase between assessment periods 3 and 4. This was followed by a moderate decline by period 6, and general stability, over the remainder of the study.

The second specific research expectation hypothesizes that there will be a positive shift in the way the child views his own self worth.

Ernest's total self esteem score, as measured by the Self Esteem Inventory, was quite high during the baseline period but falling (82nd %ile to 62nd %ile). In comparison to the low teacher ratings for his self esteem, his high score might be seen as exaggerated. This high total score is mostly the result of an

inflated school-academic self esteem score, a high average home-parental self score and a high general self esteem score. These aggrandized scores appear to reflect either Ernest's inability to accurately measure his performance; or, more probably, served as a defense against the true nature of his position. Coopersmith (1967) terms this occurrence a defense against devaluation that arises from feelings of incompetence or powerlessness.

During the remedial period, home-parental and school academic esteem scores both reversed baseline trends and fell to within an average level. Ernest's total self esteem score also continued falling, reaching the 51st tile by the end of APP.

Although these results are contrary to the expected trend, they are very much in line with teacher CBRS ratings. Leary (1957), in speaking of the different levels of personality organization, makes the point that an integrated structure reflects a congruence between levels. In this case, Ernest's subjective evaluation of his academic, home and total self esteem levels were inconsistent with the more objective teacher ratings. Over the course of intervention, teacher ratings and Ernest's rating became more comparable to each other as each approached evaluation became more realistically based, again reflective of a stronger ability to assess himself in relation to others.

In summary, the second specific research expectation is only partially accepted. For Ernest, a more positive sense of self entailed a lowering across levels of his self esteem and a restructuring of this referent system. Most of the changes suggest

that he was better able to assess and realistically judge his capabilities and limitations within his milieu.

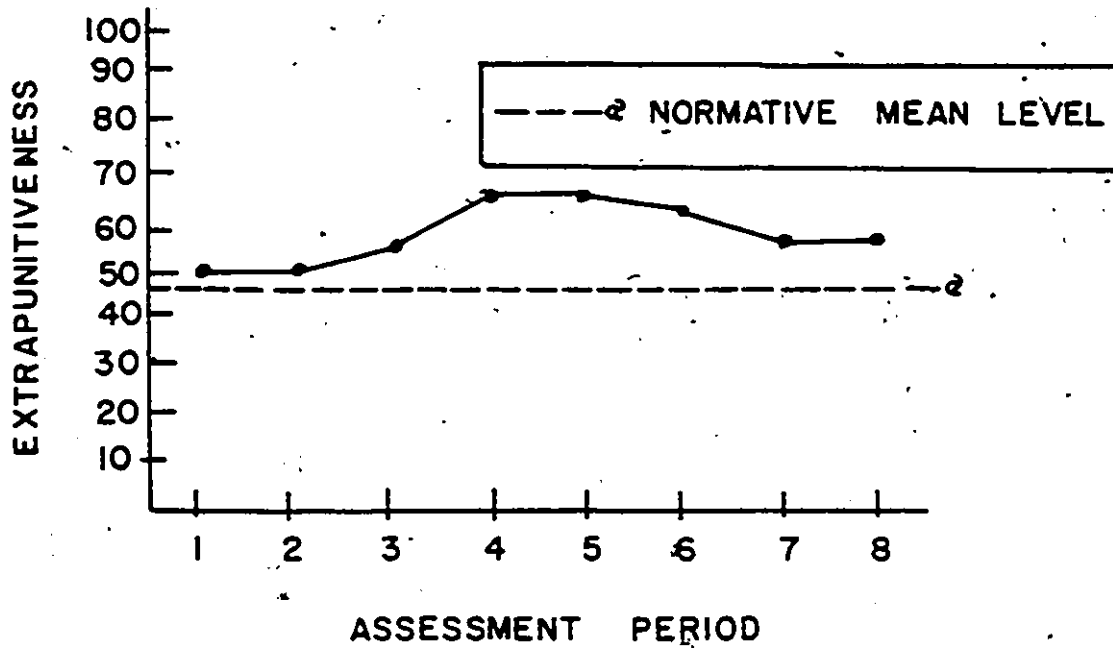
The Child's ability to cope with frustration

As can be seen by Figures 7 through 9, all three of Ernest's direction of aggression scores (extrapunitive-ness-E, intro-punitive-ness-I, and impunitive-ness-M) remained stable during the baseline period; with E and M slightly above the norm and I slightly below. E remained stable until it took a moderate jump in score between assessment periods 3 and 4 (see figure 7). It remained at this level, until it showed a small drop between assessment periods 5 and 7. It again showed stability over the followup period. Overall, there was a small rise in level of trend during the course of the study.

Ernest's I score showed only minimal variation over the entire study (see figure 8). It remained at the same level during the followup period and baseline periods.

After remaining stable during baseline, Ernest's M score dropped moderately between assessment periods 2 and 4. It then showed a small gain by period 6, and remained at that level through the followup period, slightly below the mean (see figure 9). In general, then, this score exhibited a small downward change in level over remediation.

Unlike Ernest's direction of aggression scores, his focus of aggression scores (obstacle dominance-OD, ego dominance-ED, and need persistence-NP) all varied during the baseline period. His OD score showed a moderate decline during this period, falling to just above the normative mean score. It continued this moderate downward



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

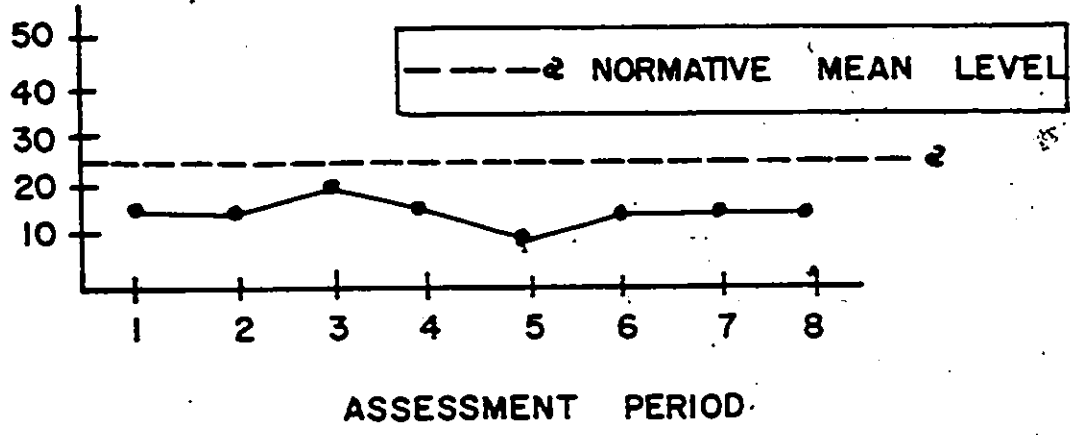
7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 7: ERNEST'S EXTRAPUNITIVE ROSENZWEIG SCORES.

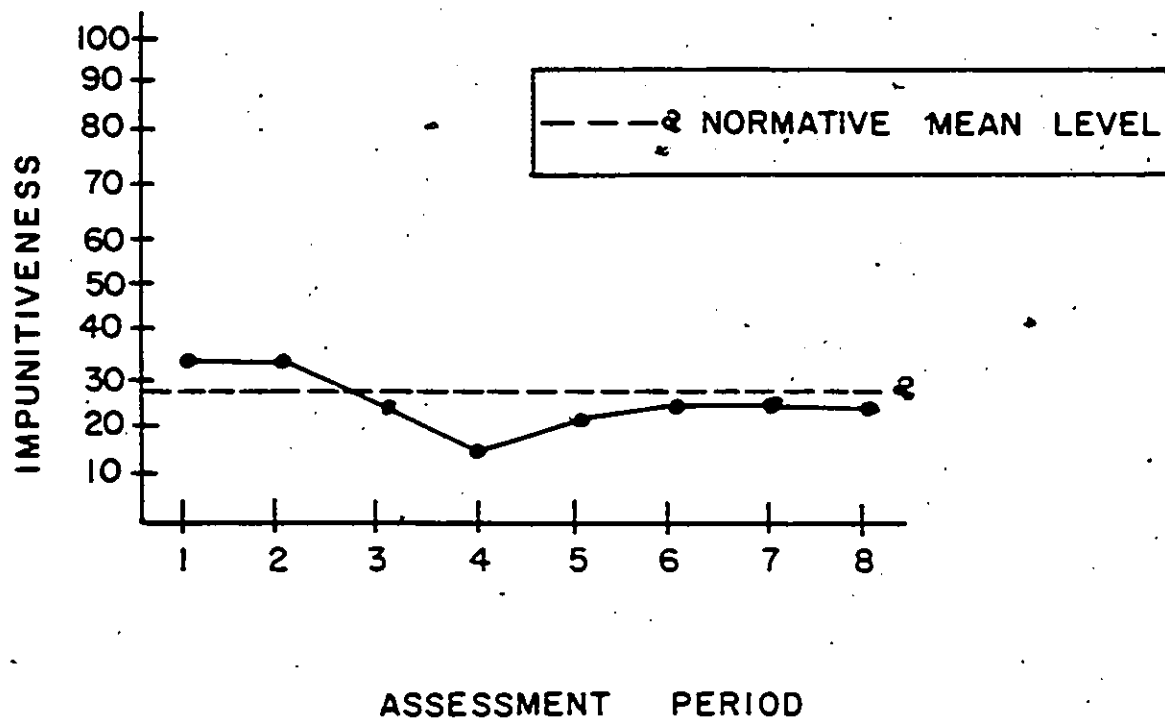
INTROPUNITIVENESS



KEY

- BASELINE PERIOD
- 1 DECEMBER 1975
- 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976
- FOLLOW-UP PERIOD
- 8 FEBRUARY 1976

FIGURE 8: ERNEST'S INTROPUNITIVE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD
 1 DECEMBER 1975
 2 FEBRUARY 1976
 APP REMEDIAL PERIOD
 3 APRIL 1976
 4 JUNE 1976
 5 AUGUST 1976
 6 OCTOBER 1976
 7 DECEMBER 1976
 FOLLOW-UP PERIOD
 8 FEBRUARY 1977

FIGURE 9: ERNEST'S IMPUNITIVE ROSENZWEIGS SCORES.

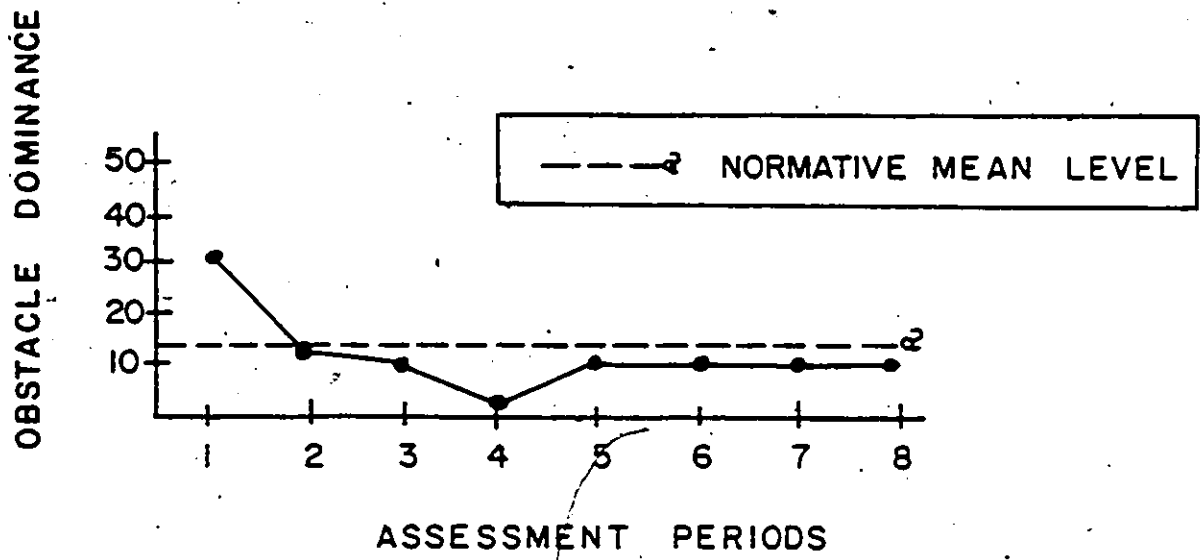
trend, reaching its lowest point by assessment period 4 (see figure 10). It showed a small gain between periods 4 and 5, then remained stable below the mean score for the remainder of the study.

Ernest's ED score showed a small gain during the baseline period, rising to just above the mean level (see figure 11). It levelled off at that point, until it spurted between assessment periods 3 and 5, falling below the mean. It remained fairly stable for the remainder of the study, showing only a minimal spurt between periods 6 and 8.

As can be seen by Figure 12, Ernest's NP score showed a small rise during baseline, which continued until period 3, leaving it slightly above the mean. It then exhibited a small dip between periods 3 and 5, and remained fairly stable, just above the mean, for the remainder of the study.

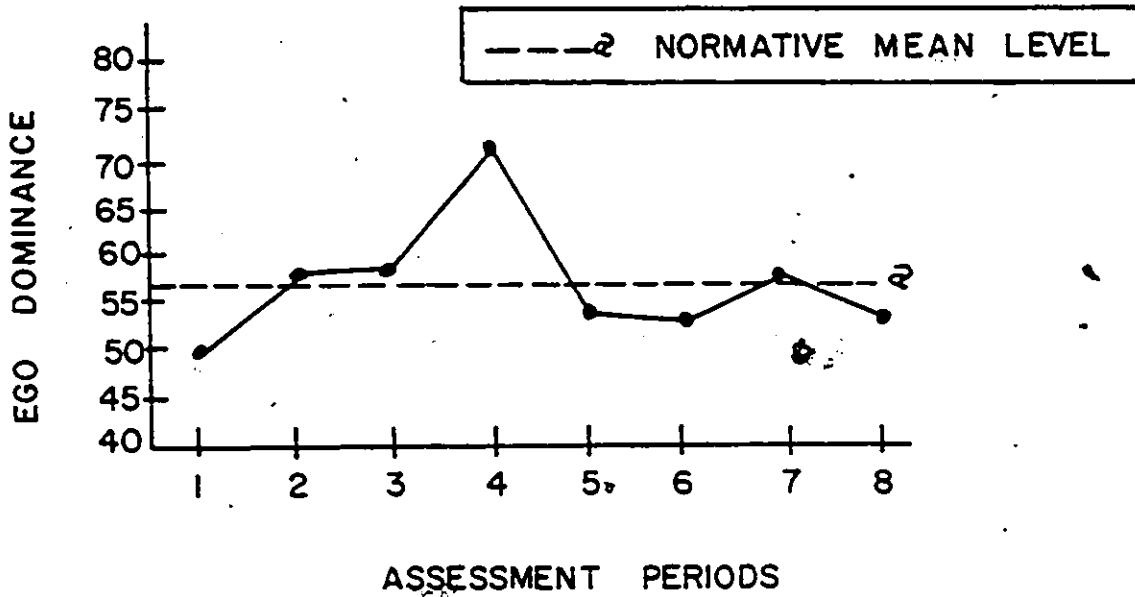
It is of interest to note, that Ernest's direction of aggression scores remained relatively stable in comparison to his focus of aggression ones. This was especially clear during the baseline period. It is also noteworthy that four of his scores reached their extreme levels during assessment period 4; OD and M, their low levels, and ED and E their high levels. This appears to suggest, that at this period, Ernest gave the most aggressive responses, and expressed his highest level of defensiveness. This expression is also suggestive of a lowering of his willingness to gloss over and deny the existence of frustrating events.

The third specific research expectation postulates a change in the way the child conceptually handles frustrating experiences with an improvement in his reading ability.



- KEY
- BASELINE PERIOD
 - 1 DECEMBER 1975
 - 2 FEBRUARY 1976
 - APP REMEDIAL PERIOD
 - 3 APRIL 1976
 - 4 JUNE 1976
 - 5 AUGUST 1976
 - 6 OCTOBER 1976
 - 7 DECEMBER 1976
 - FOLLOW-UP PERIOD
 - 8 FEBRUARY 1977

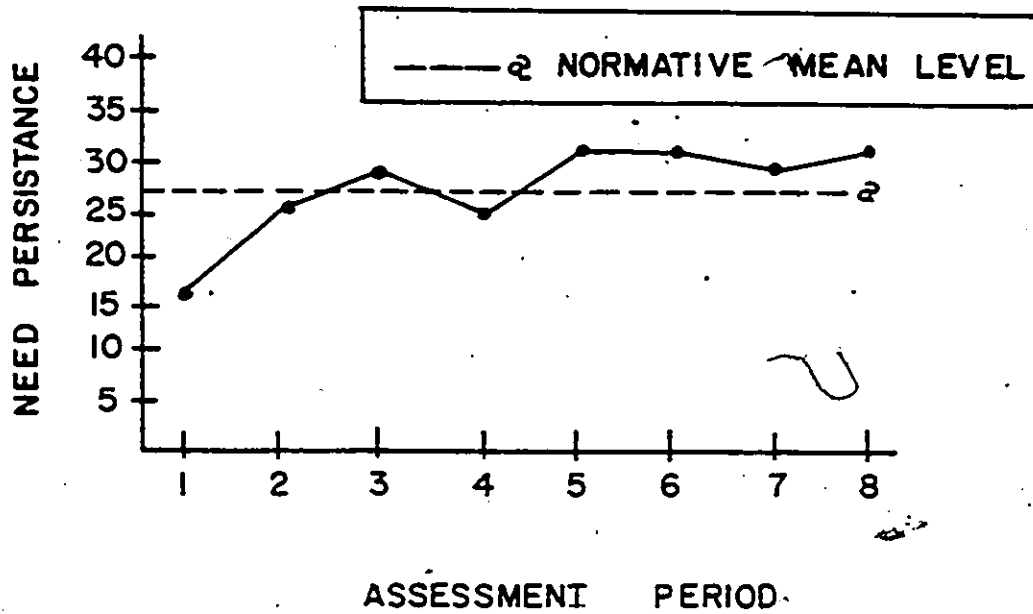
FIGURE 10: ERNEST'S OBSTACLE DOMINANCE ROSENZWEIG SCORES.



KEY

- BASELINE PERIOD
 - 1 DECEMBER 1975
 - 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
 - 3 APRIL 1976
 - 4 JUNE 1976
 - 5 AUGUST 1976
 - 6 OCTOBER 1976
 - 7 DECEMBER 1976
- FOLLOW-UP PERIOD
 - 8 FEBRUARY 1977

FIGURE II: ERNEST'S EGO DOMINANCE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 12: ERNEST'S NEED PERSISTENCE ROSENZWEIG SCORES.

Table #4
Ernest's Rosenzweig Responses

Scale	Assessment Periods								Read	Norm
	1	2	3	4	5	6	7	8		
Total Percentage Scores										
Direction of Aggression										
E*	50	50	54	66	66	62	58	58	54.9	46.0
I*	16	16	20	16	13	16	16	16	20.0	25.6
M*	33	33	25	16	21	25	25	25	26.2	28.5
Focus of Aggression										
OD*	33	17	13	4	13	13	13	13	15.4	16.3
ED*	50	58	58	71	54	54	58	54	60.8	56.4
NP*	16	25	29	25	33	33	30	33	24.7	27.2
Broken Down Response Patterns										
Direction of Aggression										
E										
A-C*	9	7	8	11	10	9	9	9	6.3	5.9
C-C*	3	5	5	5	6	6	5	5	7.3	6.9
I										
A-C	2	2	3	2	2	2	2	2	3.8	4.3
C-C	2	2	2	2	1	1	2	2	1.8	1.7
M										
A-C	4	6	4	2	3	4	4	4	4.0	3.7
C-C	4	2	2	2	2	2	2	2	2.7	3.3
Focus of Aggression										
OD										
A-C	7	3	3	1	3	3	3	3	2.3	2.2
C-C	1	1	0	0	0	0	0	0	1.9	1.8
ED										
A-C	5	6	5	8	5	5	6	5	7.4	6.2
C-C	7	8	9	9	8	8	8	8	7.7	7.0
NP										
A-C	3	6	7	6	7	7	6	7	4.4	5.8
C-C	1	0	0	0	1	1	1	1	2.3	3.1

Reading disability norms taken from Spache, 1957.

Normative scores taken from Spache, 1957.

E* - Extrapunitiveness
I* - Intropunitiveness
M* - Impunitiveness
OD*- Obstacle-Dominance
ED*- Ego-Dominance
NP*- Need-Persistence

A-G* Adult-Child
C-C* Child-Child

Assessment Periods
Baseline Period
1-December 1975
2-February 1976
APP Remedial Period
3-April 1976
4-June 1976
5-August 1976
6-October 1976
7-December 1976
Follow-up Period
8-February 1977

On the Rosenzweig P-F test, Ernest exhibited an upward change in level on extrapunitive-*E*; and a downward change in level on impunitiveness-*M*. Both these changes were the results of change on his adult-child pictures (see table). Moustakas (1953), in speaking on the therapeutic process in play therapy, talks about anger gradually becoming more differentiated and focused over the course of therapy. The literature is suggestive of the learning disabled or dyslexic child exhibiting more primitive aggressive outbursts, usually directing anger felt toward parents either at himself, or at the learning process (Harris, 1966; Zemet et. al. 1973; and McCarthy & Paraskenopoulos, 1969).

Ernest's results reveal a definite trend over the remediation of an increasing point of focus for his anger-the adult world. It is interesting to speculate what would have happened with this anger given a longer remedial process, whether this anger would have begun to defuse into ambivalence and then constructive problem solving as Moustakas suggests. It is difficult to hypothesize whether this increased amount of extrapunitive-ness is in fact a realistic tying of emotion to reality by Ernest, but the trend away from glossing over the frustrating event toward the direction of anger at an object is of significant importance.

In summary, it appears that the way in which Ernest conceptually handled frustrating situations changed somewhat over the remedial process. This switch is noticed in a decrease in his tendency to gloss over frustrations and by an increase in his outward directed hostility.

The child's personality traits and dynamic organization

Out of the thirteen source traits on the CPQ, and 4 second order factors, seven traits and 1 second order factor appeared to change during the remedial process (see table). Factor D (phlegmatic temperament vs. excitability), fell markedly over the APP remedial period. This factor, appears to reflect the amount of unchanneled nervous energy. The downward change for Ernest is indicative of a more deliberate approach on his part. This finding is very much in line with his teacher ratings, as he was seen as becoming less distractable and more atuned to his work. This trend on the CPQ did reverse itself over the followup period. The downward trend in Factor I (Harris vs. Presmis) also fits within this area, showing Ernest more realistic, practical, and mature. This increased amount of self reliance and sense of responsibility showed up in teacher ratings as well.

Two factors, H (threctia vs. parmia) and J (zeppia vs. coasthenia), corroborate the change in Ernest's socialization pattern over the remedial period. The moderate rise in H can be viewed as an improvement in his social responsiveness. The high H child tends to be more genial and friendly, making the first move in social intercourse. The fall in J, over the second half of intervention, conforms to this pattern, since it is indicative of more group oriented action.

The two factors that reflect the strength of Ernest's self (Factor O-untroubled adequacy vs. guilt proness and Q3 -low self sentiment integration vs. high strength of self sentiment), form an interesting paradox. Factor O fell, indicating more self confidence

Table #5

Ernest's CPQ Results for the Baseline
APP Remedial and Follow-up Periods

Trait	Baseline		APP Remediation	Assessment Periods	
	12/75	2/76	7/76	12/76	2/77
Primary Source Traits					
A	4	5	3	5	6
C	6	7	9	9	8
D	6	6	5	4	6
E	3	4	3	6	6
F	2	4	6	8	5
G	5	5	6	5	3
H	6	5	6	7	7
I	6	6	4	2	3
J	5	6	8	4	5
N	6	6	7	6	6
O	6	7	5	4	5
Q	6	6	6	4	5
Q	4	4	5	4	7
Second Order Factors					
Extraversion	3.7	4.2	4.3	6.0	5.4 ^a
Anxiety	5.0	5.3	4.9	5.0	5.5
Tough Poise	5.6	5.3	6.1	6.9	6.6
Independence	4.5	5.4	5.9	4.9	5.6

All trait scores are listed in sten scores.

Average sten scores for all primary source traits are 5 and 6.

^aMean score of second order factors are 5.5, S.D. - 2.0.

and resilience, while Q3 also fell, to a below average level, pointing to a lower self integration. Teacher ratings of self adjustment confirm the change in factor 0, whereas the SEI reflects a more realistic self structure. In this light, the lowering of self sentiment integration of Factor Q3 can be viewed as an accomodating process. The change from an exaggerated self defending against devaluation to a more positive assessment of capabilities, necessarily entails a hierarchial restructuring and an alteration of his referent system.

Probably the most positive change in Ernest's CPQ scores is the marked rise in ego strength (factor C) over the intervention period. The authors define ego strength as the level of "dynamic integration, emotional control and stability" (Cattell et.al. 1972; p. 26). This result appears to verify the increase in internalization and synthetic integration that the more behavioral measures suggest.

The second order factor that changed over the remedial period was Tough Poise, which reversed baseline trend and rose. The authors correlate this factor to an increase in cortical alertness and energy.

All three of Ernest's Developmental Rorschach Rating Scale indexes (cognitive, affective, and personalization) rose during the baseline period. The overall improvement in his Rorschach protocol over the remedial period is in line with this trend, bringing into question the effect of the intervention on this measure.

Another striking aspect of Ernest's Rorschach protocols is the integrative level they exhibited during the baseline period. In all

Table #6

Ernest's Rorschach Responses

	Assessment Periods				
	Baseline Period		Remedial Period		Follow-up
	12/75	2/76	7/76	12/76	2/77
Total R	30	28	39	46	45
Location Scores					
W%	23	25	13	7	11
D%	43	64	79	70	64
d%	7	0	3	9	4
Dd%	23	11	7	13	20
Determinant Scores					
F%	83	71 /	67	57	49
M	2	2	5	7	8
FM	1	4	3	4	6
m	0	0	1Fm	1m	1mF
FK	0	0	1FK	1K	1KF
Fc	1	1Fc 1c	0	0	2
Fc	0	0	0	2	0
FC	0	1	1	4	3
CF	1	0	1	0	2
C	0	0	1	0	0
Quantitative Scores					
M:FM	2:1	1:2	5:3	7:4	4:3
Sum C	1	.5	3	3.5	3.5
FC:CF+C	0:1	1:0	1:2	4:1	3:2
M:Sum C	2:1	2:.5	5:3	7:3.5	8:3.5

Table #7
Ernest's Developmental Rorschach Rating Scale Scores

Scale	Scoring Periods				
	Baseline Period		Remedial Period		Follow-up Period
	12/75	2/76	7/76	12/76	2/77
C.I.*	5.10	5.40	5.70	6.20	6.00
A.I.*	3.50	4.30	3.00	3.90	4.30
P.I.*	4.50	5.20	5.80	5.80	5.80
A					
(1)	3.00	3.00	2.80	3.50	3.60
(2)	2.23	2.63	2.76	2.88	2.66
(3)	2.36	2.70	2.73	2.96	2.70
(4)	2.50	2.50	3.10	3.05	3.00
B					
(5)	2.00	3.00	2.00	2.60	2.80
(6)	0.00	0.00	2.00	2.60	0.00
(7)	3.00	2.50	0.00	0.00	3.00
C					
(8)	2.33	2.57	3.11	2.66	2.86
(9)	2.20	2.60	2.72	3.13	2.90

a 0 indicates no scorable responses given

A - Cognitive Integration

- (1) Whole Responses
- (2) Part Responses
- (3) Form Level
- (4) Form-Controlled Determinants

B - Affective Integration

- (5) Form-Color Integration
- (6) Form Shading Integration
- (7) Texture Integration

C - Personalization

- (8) Quality and Balance of Movement
- (9) Quality and Balance of Movement, Shading and Color

*C.I.- Cognitive Index
A.I.- Affective Index
P.I.- Personalization Index

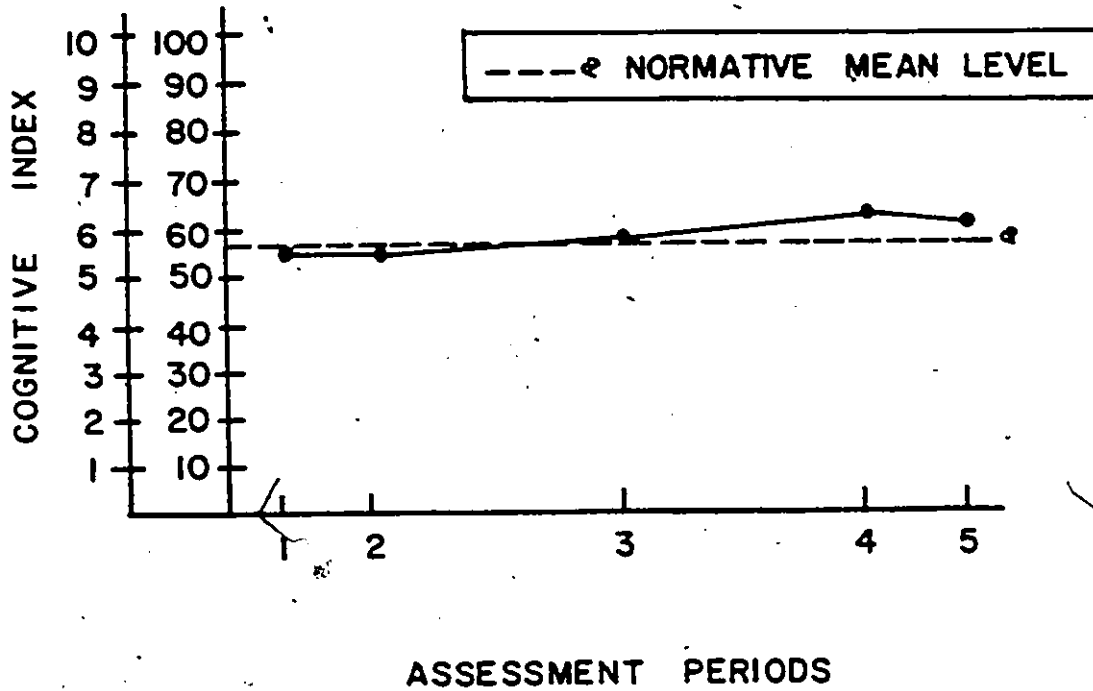
three instances, Ernest's qualitative indexes began the study at the mean level for children his age (see table 7). This is indicative of the underlying dynamic strength Ernest showed even before the remedial process.

As can be seen by figure 13, Ernest's cognitive index remained fairly stable at the mean score for his age, with only a minimal upward trend during the first three assessment periods. This was followed by a small upward trend during the second five months of intervention, which already placed this score on standard deviation above the mean into the high average range. Although there was a minimal downward trend over the followup period, Ernest's cognitive index remained in this high average range.

Part of the rise in this index over the last five months of intervention can be attributed to a rise in subscale 1, whole responses (see table). Although the quality of Ernest's whole responses rose during this period, the relative percentage of these responses fell to its lowest level of the study, 7% (see table). Using norms for normal children at 10 years of age, Ernest's W% at the end of remediation is very low (37.9% for average intelligent children; Levitt & Truuma, 1972).

The whole response is usually interpreted as the ability of the child to organize intellectually. In this case, although the percentage fell, the quality improved, which could be indicative of Ernest becoming more selective in his abstractions.

Ernest's affective index exhibited a small upward trend to a high average level, during the baseline period. There was a moderate decline in this index during the first five months of



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

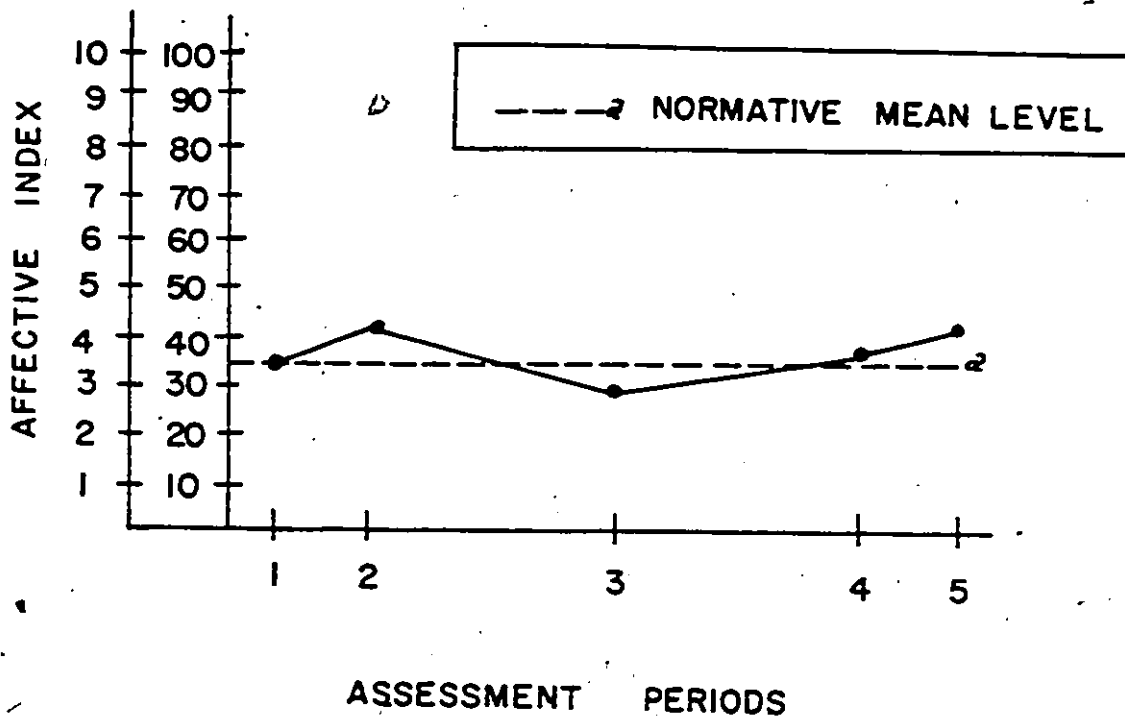
3 JULY 1976

4 DECEMBER 1976

FOLLOW-UP PERIOD

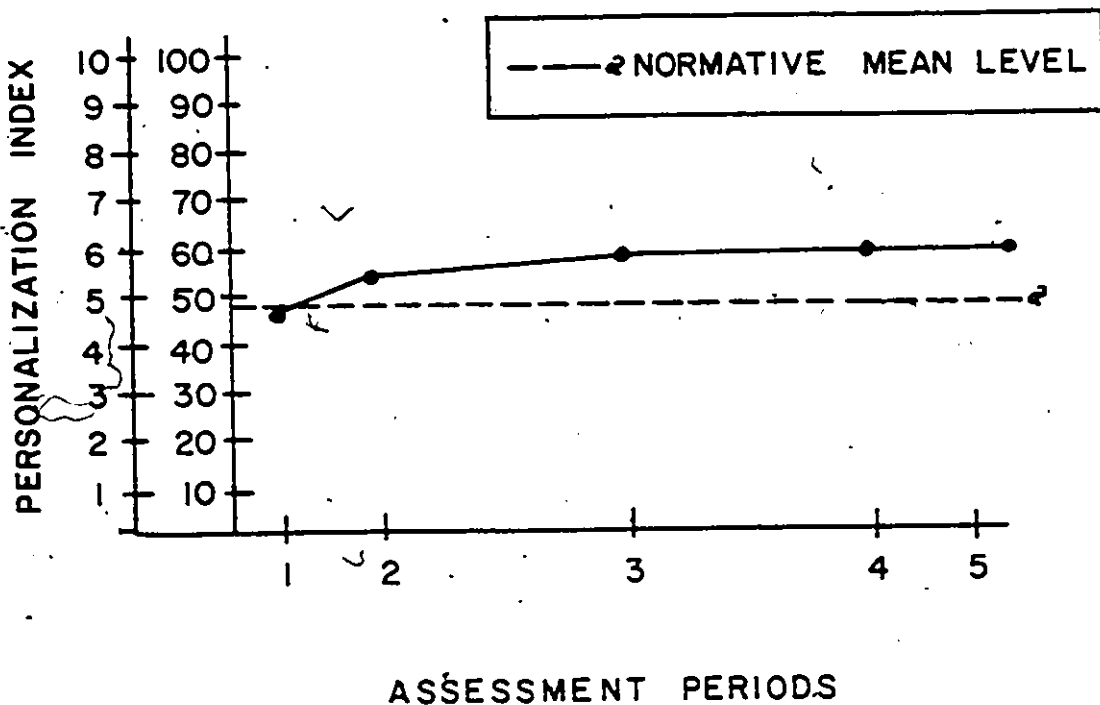
5 FEBRUARY 1977

FIGURE 13: ERNEST'S R.R.S. COGNITIVE INDEX.

KEY

BASELINE PERIOD
 1 DECEMBER 1975
 2 FEBRUARY 1976
 APP REMEDIAL PERIOD
 3 JULY 1976
 4 DECEMBER 1976
 FOLLOW-UP PERIOD
 5 FEBRUARY 1977

FIGURE 14: ERNEST'S R. R. S. AFFECTIVE INDEX.

KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 JULY 1976

4 DECEMBER 1976

FOLLOW-UP PERIOD

5 FEBRUARY 1977

FIGURE 151 ERNEST'S R.R.S. PERSONALIZATION INDEX.

intervention, but it recovered to its high average level by the end of the study.

The moderate fall in this index during the first five months of APP remediation was partially attributable to a fall in the quality of Ernest's form color integration (scale 5), and a drop in texture responses (scale 7) to zero. Simultaneously, there was a rise in his shading responses. The recovery of the affective index over the final five months of remediation was partially due to an increase in the number and quality of Ernest's form controlled color responses as well as his achromatic color responses (see table).

Overall then, the first five months of intervention appears to have negatively effected Ernest's affective integration. This score showed a recovery over the final five months of intervention and into the followup period. This is indicative of an increased ability on Ernest's part to react in an appropriate way to the emotional demands of diverse situations.

Ernest's personalization index rose moderately over the first three testing periods to a high average range (see figure 15). This index remained fairly stable at this level over the final two assessment periods.

Partially responsible for the rise in this index over the remedial period was a rise in Ernest's human movement responses (see table). Human movement (M) responses are usually associated with ego strength (Klopfer 1956), or richness of inner life (Ames et.al; 1974). Along with a rise in ego strength, there was also a minimal rise in inanimate movement responses (m) over the intervention.

These responses are usually seen as reflective of inner tension (Klopfer & Davidson 1962).

The last of the specific research expectations postulates a change in the underlying personality organization of the child, in relation to cognitive and affective integration, as well as in the structuring of his experience.

Two of the subscales of cognitive integration did exhibit a positive trend concurrent with the remediation: scale 1 (whole responses) rose over the last half of APP and into the followup period; and scale 4 (form controlled determinants), showed an ascending tendency during intervention.

Although the quality of Ernest's W responses improved, the relative number decreased over the remedial period, which is suggestive of a higher degree of scrutiny given to these responses. There was also an increase in the percentage of d and Dd responses during this period (see table). Whereas the W response is usually associated with abstraction and the ability to relate extemporaneous details (Piotrowski 1974), both the d and Dd responses are often seen as being concerned with small, sometimes disparate details (Piotrowski, 1974; Mook, 1977). Although Ernest remained predominately a practical and concrete thinker (D*), his criticality developed both toward the more abstract and obvious elements of his perceptual environment.

The improvement in level of scale 4 (form-controlled determinants) is related to the internalization of control. This upgrading of control can be viewed as an improvement in Ernest's reflective ability—thinking before doing.

Ernest's affective index dropped considerably over the first five months of intervention, but rose back strongly by the followup period. It is also interesting to note that scale 6 (form-shading integration) varied opposite that of scale 7 (texture integration), over the course of the study. Also, concurrent with the intervention period, sum C rose, pure C responses appeared in his protocol, and FC rose over the final five months (see table).

The rise in form shading responses (KF, K, and FC') over the remedial period could possibly be seen as a rise in Ernest's anxiety level. Usually these responses are given very infrequently at this age, and their appearance might be viewed as important. Texture responses are usually seen as reflective of interpersonal sensitivity (Schachtel, 1966). Their disappearance, coupled with Ernest's rise in anxiety over this period, is a measure of the difficulty he was experiencing in social interaction. The rise in sum C over the remedial period, is a reflection of Ernest's desire for social intercourse, but in the process of learning, the subtle cues and the redirection of his behavior appears to have negatively effected his affective integration as a whole.

The increase in FC scores over the last five months of remediation indicates an increasing amount of emotional control, and is also reflective of the appropriateness of these reactions. This, coupled with his pure C response (which is the uncontrolled, more explosive type reactions) indicates that although his emotional reactivity was coming under increasing internal control, some aspects have, as of yet, eluded that process. Ernest's followup results in this area confirm this trend, as the pure C response

disappeared, but he did give 3 CF responses, indicative of more spontaneous, socially appropriate response pattern.

The personalization index on the Developmental Rating Scale is a measure of the child's differentiation and individuation, both in relation to himself and to his surrounding milieu. This general index showed improvement concurrent with the remedial period, but this trend was evident during the baseline as well.

The first of these two scales (8—the quality and balance of movement) is used as an indicator of the child's attitude toward himself (Mook, 1977). This scale showed general improvement over APP and followup, but this followed baseline patterns. Also during the remedial period, M showed an upward change in level and Fm appeared on his protocol for the first time. The rise in both these scores are well above age expected norms (M=1.7 and m averages .4 responses; Ames et. al. 1974). Human movement (M) responses are usually associated with ego strength and the ability of the child to stabilize and consciously direct his interactions with his environment (Klopfer and Davidson, 1972; Piotrowski, 1974). This rise would appear to corroborate the rise in factor C on the CPQ, although there is not statistical evidence that the two measure the same organization. The increase in M responses, along with the appearance of inanimate movement at this point signifies a parallel rise in internally felt tension.

The second scale that comprises the personalization index (scale 9—the quality and balance of movement, shading and color) measures the child's experience in respect to others. This scale

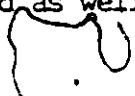
also exhibited a general rise during remediation, but this was in line with baseline trends as well.

In summary, the fourth specific research expectation can be supported. Cognitively, Ernest appeared to gain both a criticality of thought, and more importantly, improved in his ability to delay immediate needs in favor of reflected action. Affectively, Ernest became more responsive to his environment and, by the followup period, exhibited a positive relationship between internalized control and spontaneity of expression. He also appeared to be gaining in ego strength and his ability to internalize his experience.

Summary of Psycho-Social Results

The major change in Ernest's psycho-social/personality of functioning appears to be in the congruence between different levels his hierarchial psycho-social/personality organization. During the baseline period, a major discrepancy existed between how his teacher viewed his adjustment and his feelings of self. Concurrent with the remedial process, Ernest's self concept and self adjustment were seen by his teacher as showing marked improvement. During this period as well, his own evaluation of his esteem levels generally revealed a more realistic organization. Ernest's dynamic personality organization exhibited more internalized cognitive controls, as well as strengthened inner resources, after the remedial process.

Socially, Ernest's teacher also noticed a generalized improvement in his skill level. His behavior appeared to become more socialized as well as more stable. Although mother's rating



did not mirror this improvement, her declining rating could be viewed as a reaction to her son's new found independence. The CPQ also revealed a definite trend toward more congeniality in his social milieu, as well as a leaning toward group oriented behavior. There were some indications on projective analysis, that Ernest was becoming more responsive to overt environmental stimulation.

There were definite signs of strengthened ego skills across the remedial period. This was evidenced by an improvement in Ernest's ability to assess socio-behavioral feedback more accurately. Ernest also appeared more able to control and direct his energy more effectively.

Child #2-Andrew

APP Remedial Programming

Andrew had a long passive training phase lasting almost 110 sessions. His natural mother's voice was poor in tonal quality as well as lacking in higher frequency sound. After re-recording and re-filtering, this natural maternal voice did not appear to be aiding Andrew's opening of selectivity (Andrew's listening test remained closed past 3000 Hz.). The sonic birth was attempted, but not successfully, as Andrew failed to recognize his maternal voice. At this point in programming, it was decided to alternate the natural voice with a substitute female voice rich in the higher frequencies. Selectivity finally opened by mid-May and the sonic birth was successfully accomplished over 15 sessions.

The performance phase of programming lasted for 140 sessions from June to October. Synkinesis evident as Andrew tried very hard to form his lips properly to repeat the presented words. Andrew's

listening test showed three positive signs during this period; first, bone conduction began to fall, and in the middle frequencies, falling below the air curve. Second, the air curve took a more ascending trend in the lower frequencies, and third, spacialization errors disappeared.

The final training phase consisted of 35 sessions interspersing first grade reading material with filtered music.

Criterion Results

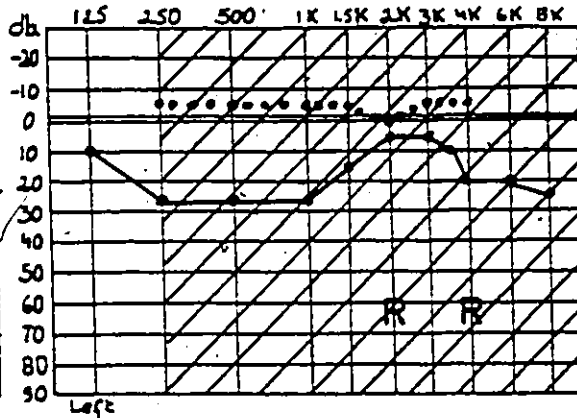
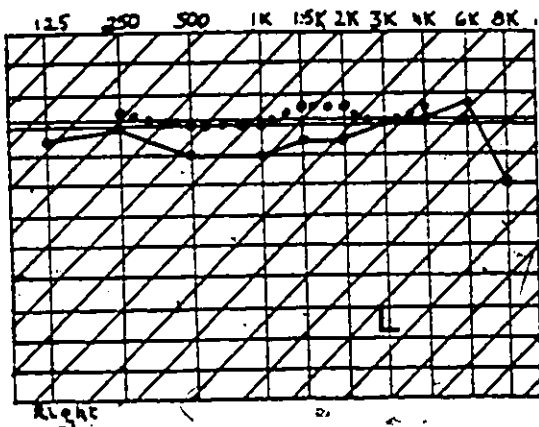
All of the criterion academic testing for Andrew changed in a positive direction over the remedial period (see table 8).

In looking at his Myklebust learning quotient, there was a rise from a pre-remedial level of 86 to a post remediation score of 94. This placed him above the accepted cutoff score of 89, suggesting that by this criteria, Andrew could no longer be considered learning disabled. The Myklebust pupil rating scale also rose above the cutoff score for learning disability. It reached a post-remedial score of 73, up from his pre-remediation level of 68. By this behavioral criteria, Andrew would no longer have been acceptable for inclusion in the initial selection process.

The change, over the APP remedial period in Andrew's Tomatis listening test and audiometerometry, was also quite impressive (see figure B). During this period, the following changes were of import: auditory selectivity opened in both ears; spacialization errors disappeared on both ears; auditory laterometry switched from a +1.5 left ear advantage to a +1.5 right ear advantage; a drop in bone conduction, especially on the left ear; a more normal ascending air curve, on the right ear. All of these indications point to an

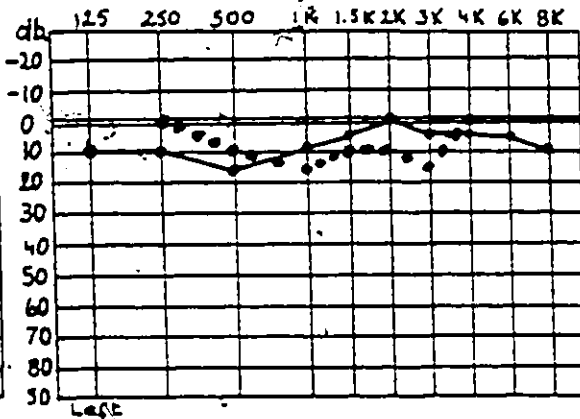
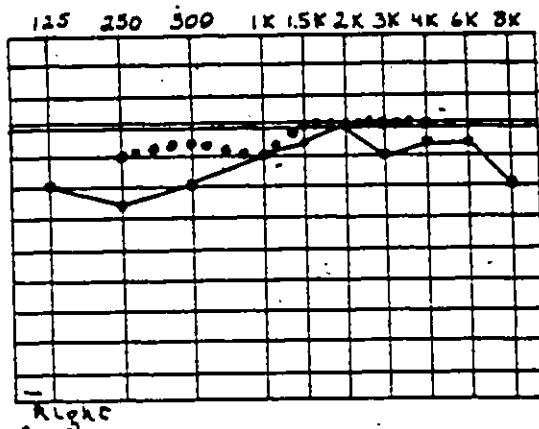
Date: BASELINE TESTING

155



Examiner: _____

Date: FOLLOW UP TESTING



Examiner: _____



DIAGONAL LINES ARE INDICATIVE OF THOSE FREQUENCIES WHERE AUDITORY SELECTIVITY WAS CLOSED, AS MEASURED BY AUDITORY DISCRIMINATION. (TOMATIS 1978.)



THE NUMBER WITHIN SIDE THE BOX INDICATES THE STRENGTH OF AUDIOLATEROMETRY. (TOMATIS LATERALIZATION TEST.)

R-L-M

A LETTER WITHIN GRAPH INDICATES SPACIALIZATION ERROR.

BONE CONDUCTION CURVE

AIR CONDUCTION CURVE

improvement in Andrew's linguistic and listening efficiency. According to Tomatis' criterion (1978) all of these areas would point to a successful remediation.

The last figure to add to this evaluation is Andrew's composite academic index. Although this index gained two months over the baseline period, it gained 14 months over the remediation, indicating a change in level of trend.

How significant others view the child

All three of Andrew's teacher rated adjustment scales exhibited the same general slope over the course of the study (see figure 16). They began at least moderately below the average adjustment range and were fairly stable during the baseline period showing only minimal variation. Between assessment periods 2 and 4, all three of these scales exhibited small to marked spurts, with Andrew's self and school adjustment reaching to within the average range and his social adjustment remaining just below that level at period 3. Self, social and school adjustment all exhibited marked gains between assessment periods 4 and 6, reaching to the high average range. All three scales dipped over the final three assessment periods, ending the study in the high average range. All three of these teacher rated adjustment scales showed upward changes in level over the intervention and followup periods.

Andrew's parental rating of his self adjustment exhibited a small upward trend during the baseline period, rising out of the average adjustment range. (See figure 17). This scale then remained fairly stable for two assessment periods, but exhibited a moderate dip in slope by period 5. By the end of the followup

Table #8
Andrew's Academic Testing Scores for
Baseline, APP, and Followup Periods

Test	Scoring Periods								
	Baseline Period			APP Remediation			Followup		
	12/75	2/76	4/76	6/76	8/76	10/76	12/76	2/77	
W.I.S.C.-R.									
Verbal I.Q.	109							119	
Performance I.Q.	123							117	
Full Scale I.Q.	118							121	
WRAT									
Reading	2.1	1.6	2.2	2.6	2.9	3.3	3.6	3.9 ^a	
Spelling	1.6	1.9	1.8	1.8	1.8	2.0	2.2	2.5	
Arithmetic	2.2	2.2	2.6	2.6	2.8	2.8	3.0	3.6	
Gates-McGinitie									
Vocabulary	2.6	2.4	2.8	4.1	3.1	4.1	3.7	4.4	
Comprehension	1.7	1.9	2.3	2.6	2.8	4.0	4.9	4.6	
Composite Academic Index	2.0	2.0	2.35	2.75	2.7	3.2	3.5	3.8	
PBRS									
Verbal	29	31					32		
Non-Verbal	39	37					41		
Total	68	68					73 ^b		
Learning Quotient	86						94 ^c		

^aAll Scores are in grade equivalents by year and months.

^bHighest score is 120, with 70 being the cutoff for L.D.

^cCutoff score for learning disability is 89.

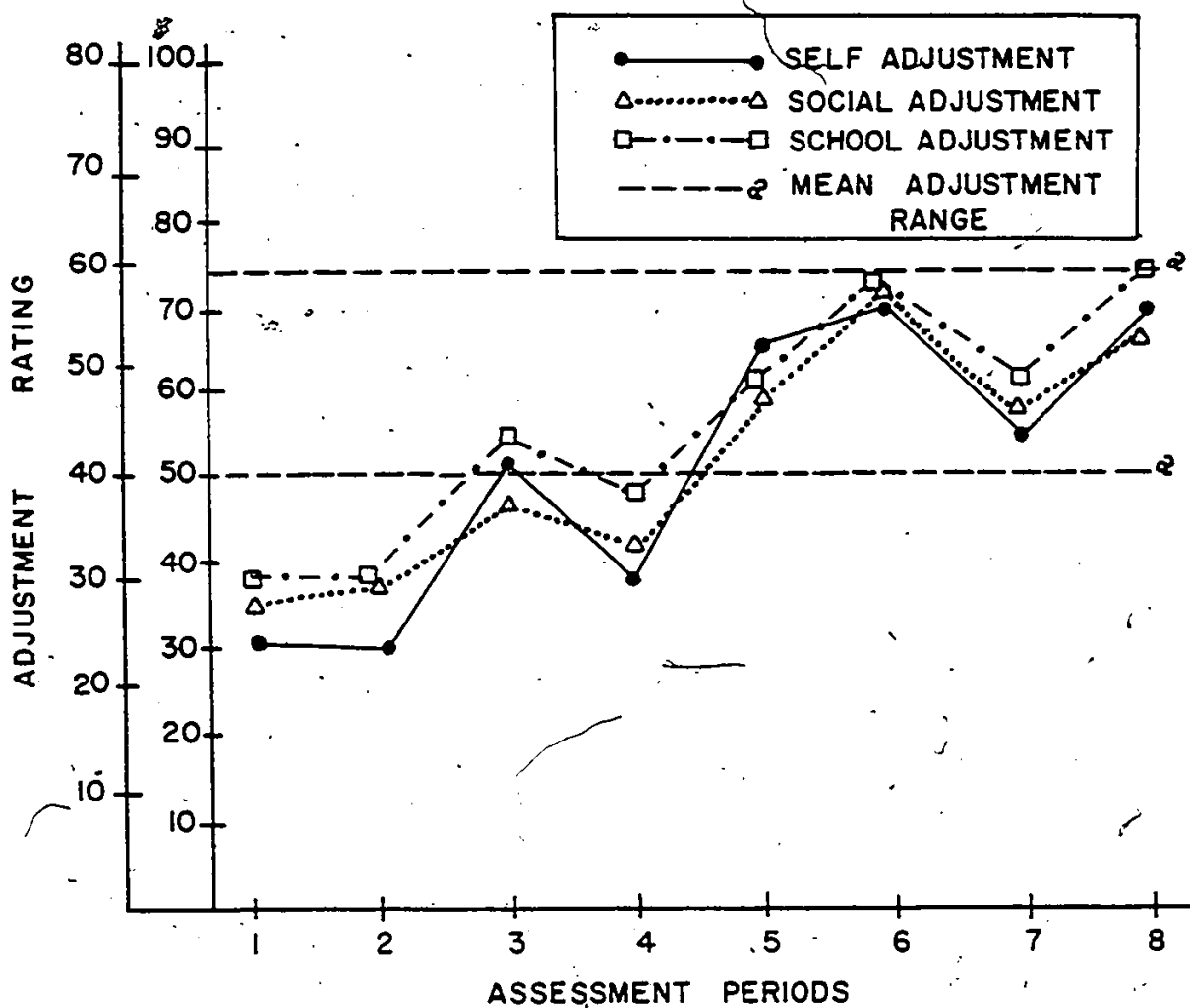
period, Andrew's self adjustment rose back to the high average range, showing a small downward change in level of trend over the study.

Andrew's social adjustment rating exhibited only a minimal downward trend, slightly above the average adjustment range, during the baseline period (see figure 16). It then showed a moderate gain reaching its highest level between assessment periods 4 and 5. After showing a small decline by period 6, this scale remained stable over the remainder of the study.

As can be seen by figure 18, Andrew's inferred self concept remained fairly stable over the first three assessment periods, a small degree below the mean level. After showing a small dip between periods 3 and 5, this rating exhibited a moderate rise to slightly above the mean level by period 6. It remained fairly stable, at that level, for the remainder of the study. An upward change in level was seen over the remedial period.

The first specific research expectation postulates a positive change in the way significant others in Andrew's life view his self and social adoption.

Andrew's teacher saw his self adjustment as extremely poor and falling minimally over the baseline period. Rating during this period generally reflects both a somber, unhappy attitude towards things, as well as an immature lack of internalized controls. He was seen as usually depressed and unkempt in appearance, and easily flying off the handle. Concurrent with the remedial period, his overall rating rose quite substantially, placing him within the average adjustment range. Many of the overt signs of tension



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

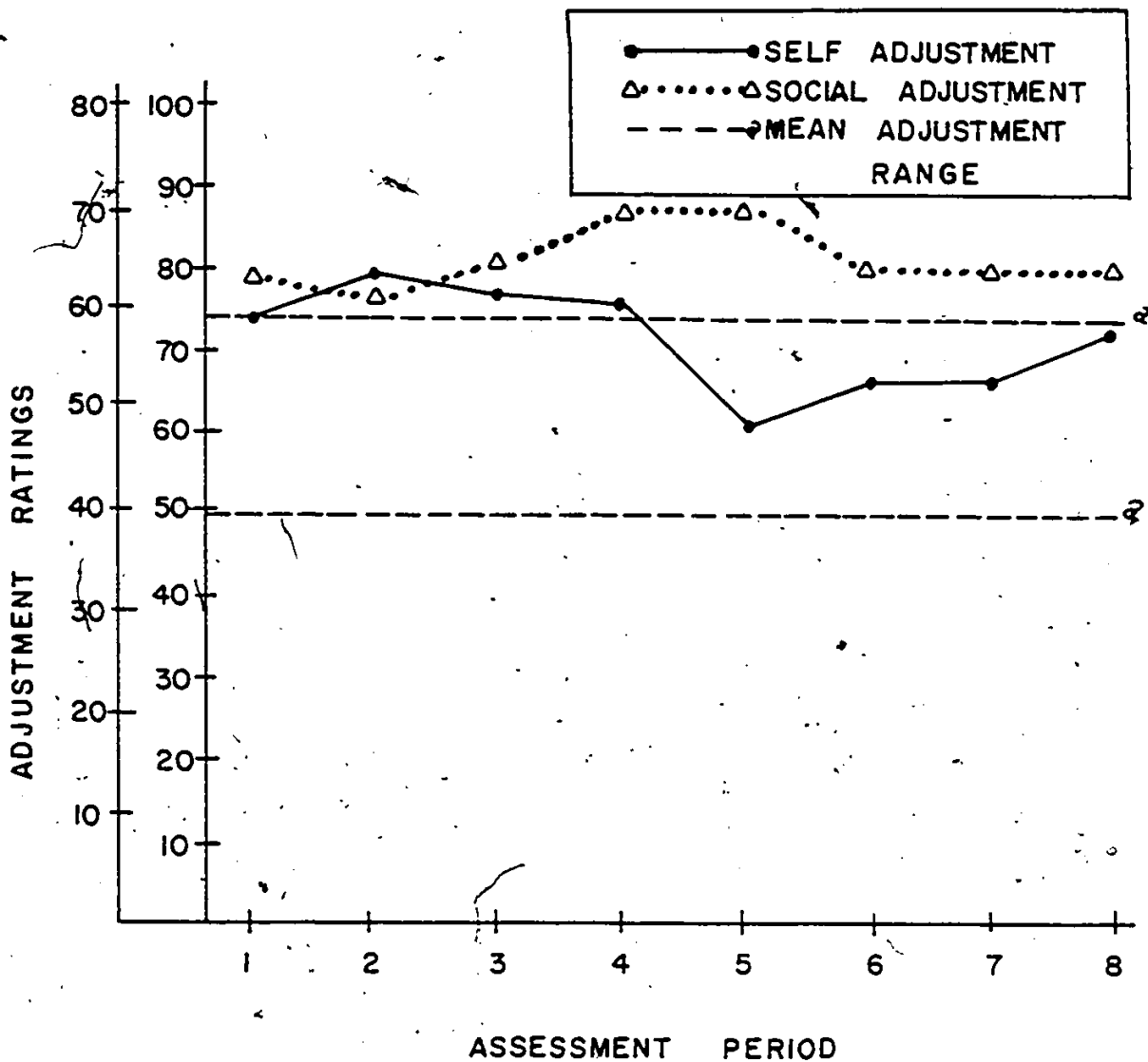
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 16: ANDREW'S ADJUSTMENT RATINGS ON THE CHILD BEHAVIOR RATING SCALE AS MEASURED BY HIS TEACHER.



KEY

- BASELINE PERIOD
- 1 DECEMBER 1975
- 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976
- FOLLOW-UP PERIOD
- 8 FEBRUARY 1977

FIGURE 17: ANDREW'S ADJUSTMENT RATINGS ON THE CHILD BEHAVIOR RATING SCALE AS MEASURED BY HIS PARENTS.

appeared to lessen, as he became less reactive and more selective in his expressions of exuberance, and he also eliminated biting his nails. Ratings reflect a general moderation in gross activity as well. Andrew's affect also improved; he cried less for no reason and physically, he showed a healthier appearance. The rating also appeared to indicate an increasing ability on his part to mediate his action by thought. He became more tactful and was better able to concentrate on tasks for longer periods of time without his mind wandering off into daydream activity.

Teacher rating of Andrew's social adjustment also exhibited an upward trend concurrent with remediation, but results here must be tempered in deference to a minimally rising baseline trend. Changes on this scale appear to reflect a general maturation in Andrew's peer related behavior. After the remedial process, he appeared to make friends much more easily and showed much more genuineness in his interactions. He also appeared to pay more attention when others spoke, and took to heart their suggestions.

As with Andrew's self adjustment ratings, his school adjustment was rated poor and falling minimally over the baseline period. The major difficulties brought out by this scale, point to him having major problems completing his work and distracting the other children in class from doing theirs. The quality of his school work also was quite variable, changing from day to day.

Concurrent with the remedial period, Andrew's school adjustment rose substantially, reaching to within the average range. The major improvement centered around his involvement in co-curricular activities, as well as his increasing ability to successfully

interact with one or more staff member. Also during this time, his in-class behavior appeared to moderate, as he spent more time on his work and distracted others less.

Parental ratings of Andrew's self and social adjustment during the baseline period, were demonstrably higher than his teacher ratings during the same period. His mother saw his self adjustment as rising during the baseline to the above average range. Whereas, his teacher noticed signs of depression, his mother felt his affect was very positive. Mother also did not appear to notice any of the overt signs of anxiety which his teacher had. Over the remedial period, parental rating of Andrew's self adjustment generally had a downward trend. On the scale itself, mother rated him falling slightly over a number of items. In general though, she saw him as moodier (i.e. crying more frequently, preferring to be alone), and exhibiting less control over his temper. At one point, she emphasized this by restating in the margin of the scale, that he was exhibiting more of a display of temper.

Mother's rating of Andrew's social adjustment varied generally opposite that of self adjustment. She saw his social adjustment as falling over the baseline period, but generally rising concurrent with the intervention. At no time though, did his rating fall to within the average range. Mother's improved ratings focussed on Andrew's becoming less demanding of their attention and getting along better with children both younger and older than himself.

Teacher rating of Andrew's self concept remained stable over the baseline, but showed a definite improvement during the intervention period and into the followup. This improvement in

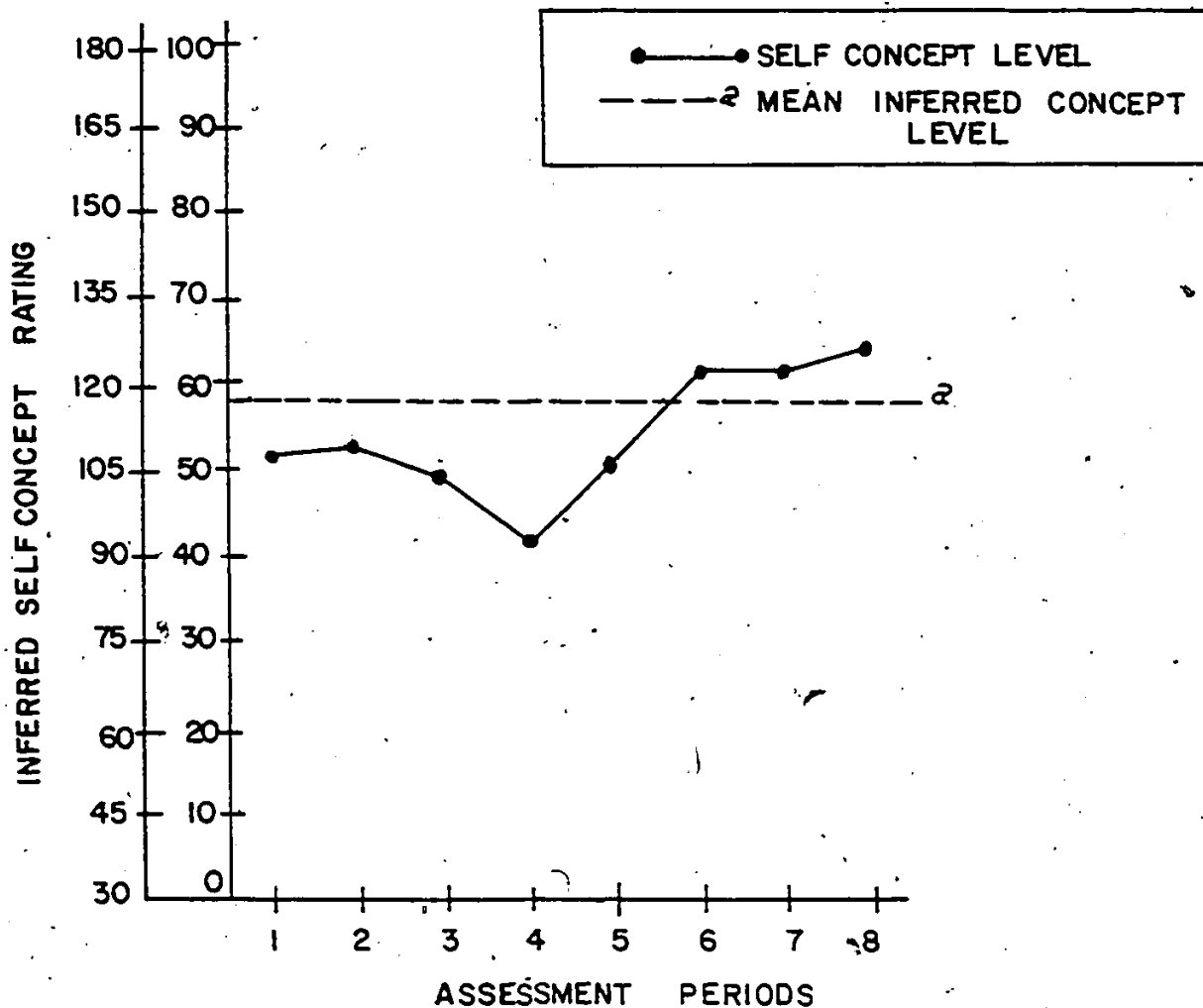
rating centered around three general areas. First, he was viewed as less fearful in his approach to others and to new events within his environment. He also began "mixing" more with his peers, especially during physical education. The second area Andrew showed improvement was in the amount of effort and pleasure he was putting into his academics. Lastly, his teacher noticed that Andrew was no longer talking just to hear his own voice or gain attention, but was more serious and critical about when he spoke and what he said.

In summary, then, this first specific research expectation can only partially be supported. Andrew's teacher saw both his self esteem and self adjustment as making definite gains. Behaviorally, this was seen both in a reduction of overt anxiety as well as an improvement in his general attitude toward his environment. Another important aspect in this rated improvement, was a general moderation both in his behavioral swings and his academic performance. Although her ratings were substantially higher for the entire study, mother's rating of Andrew's self adjustment fell over the remedial period.

Teacher rating of Andrew's social adjustment showed positive gains concurrent with remediation, but baseline trend must temper this progress. Mother's rating of social adjustment rose during intervention, with positive changes seen in his peer relations and, he was viewed as less demanding and more self sufficient in his play.

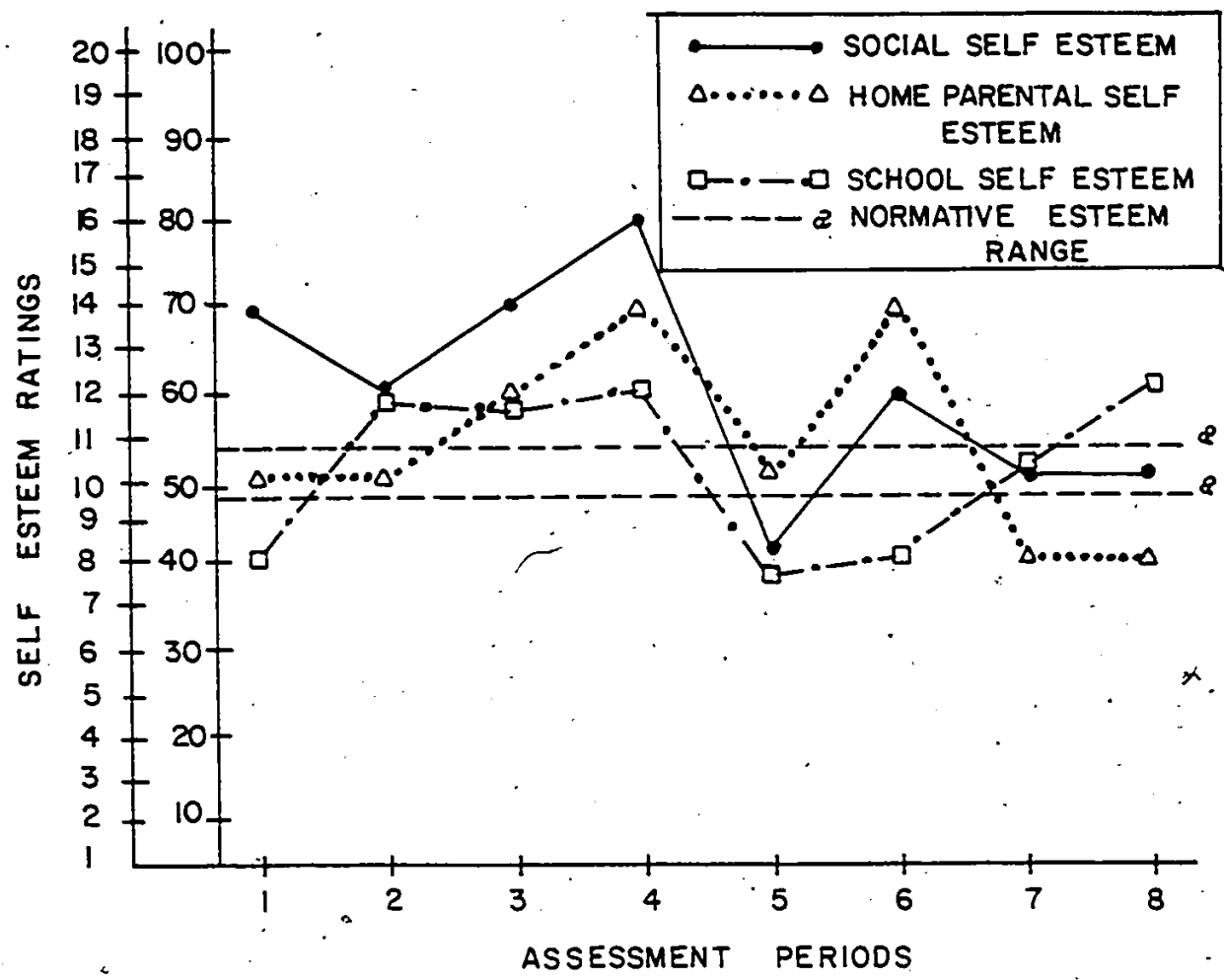
How the child views himself

As can be seen in figure 19, Andrew's rating of his social self esteem exhibited a moderate decline during the baseline but still

KEY

BASELINE PERIOD
 1 DECEMBER 1975
 2 FEBRUARY 1976
 APP REMEDIAL PERIOD
 3 APRIL 1976
 4 JUNE 1976
 5 AUGUST 1976
 6 OCTOBER 1976
 7 DECEMBER 1976
 FOLLOW-UP PERIOD
 8 FEBRUARY 1977

FIGURE 18: ANDREW'S INFERRED SELF CONCEPT AS MEASURED BY THE INFERRED SELF CONCEPT SCALE.



KEY
BASELINE PERIOD
1 DECEMBER 1975
2 FEBRUARY 1976
APP REMEDIAL PERIOD
3 APRIL 1976
4 JUNE 1976
5 AUGUST 1976
6 OCTOBER 1976
7 DECEMBER 1976
FOLLOW-UP PERIOD
8 FEBRUARY 1977

FIGURE 19 ANDREW'S SPECIFIC SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.

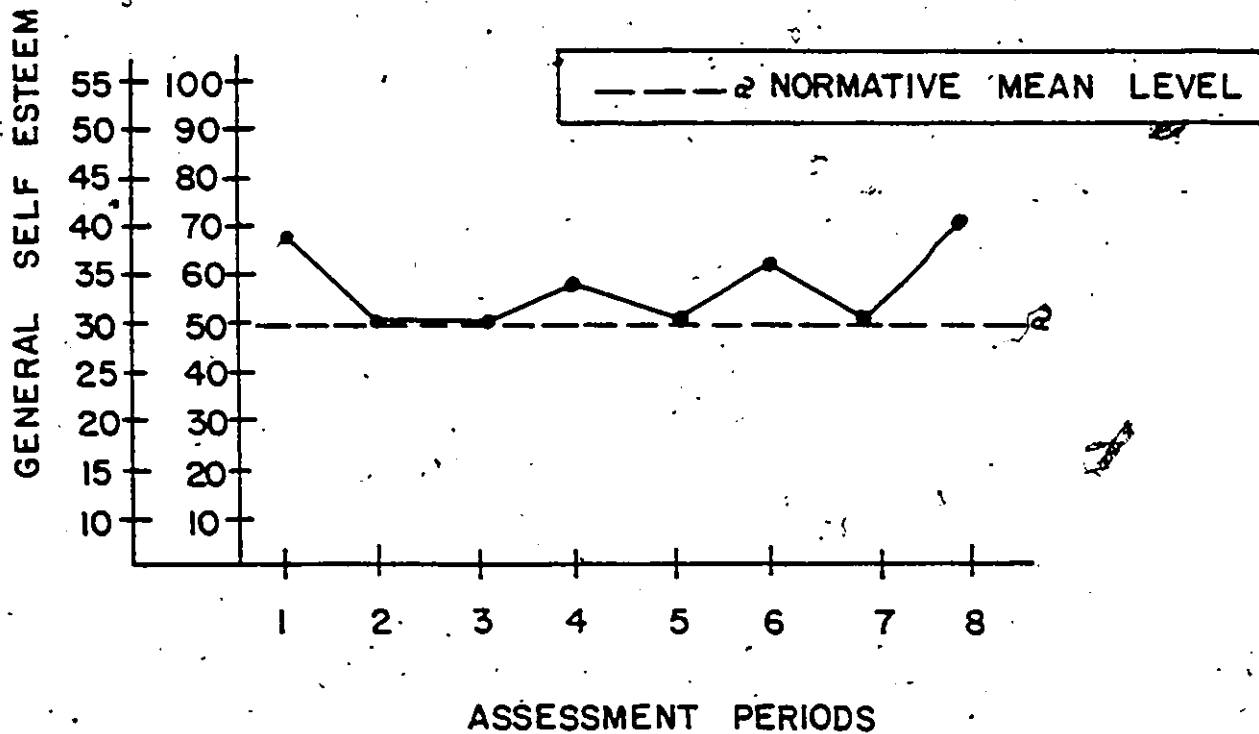
remained above mean levels. By assessment period 4, this score showed a marked gain reaching its highest level in the study. This was followed by a marked decline by period 5, in which this score fell to below the mean level. After a moderate-small spurt between periods 5 and 7, this score remained stable within the average range over the followup period.

After remaining stable within the average range during the baseline period, Andrew's home parental self esteem was quite variable over intervention, showing two moderate spurts. By assessment period 7, it had fallen to a small degree below the average range. It remained at that level over the followup period.

Andrew's school self esteem exhibited a marked gain from below the average range to above it, during the baseline period. After remaining stable for 2 assessment periods, this score fell back to below the average range by period 5. By assessment period 7, it rose back to within the average range and continued to exhibit a small gain over the followup period.

After exhibiting a moderate decline during the baseline period, to the mean level, Andrew's general self-esteem was variable for the entire study (see figure 21). It ended the intervention period (assessment period 7), at the mean level and then exhibited a marked rise over the followup period.

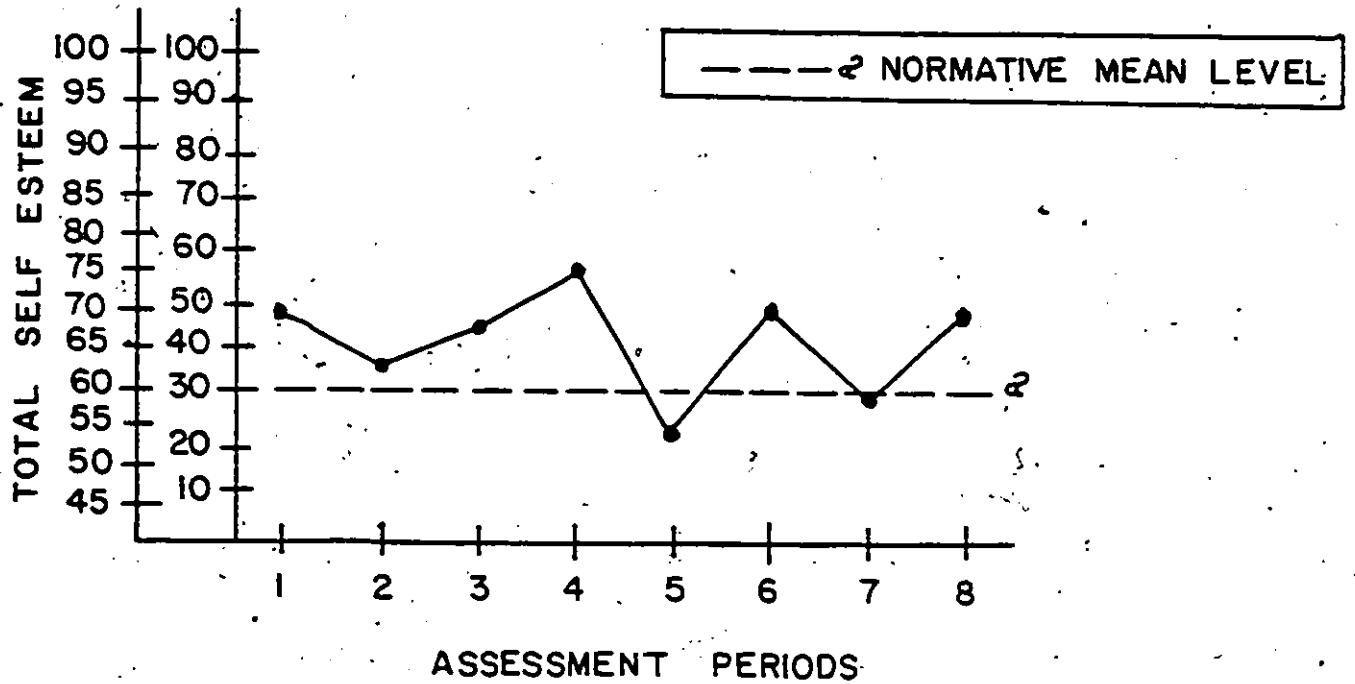
As with his general self esteem, Andrew's total self esteem score was quite variable over the intervention period, exhibiting two moderate spurts, it eventually ended the remedial period only a small degree below where it began, (see figure 22). This score showed a moderate rise over the followup period.



KEY

- BASELINE PERIOD
- 1 DECEMBER 1975
- 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976
- FOLLOW-UP PERIOD
- 8 FEBRUARY 1976

FIGURE 21: ANDREW'S SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP. REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 22: ANDREW'S SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.

The second specific research expectation postulates a positive change in the way the child views himself.

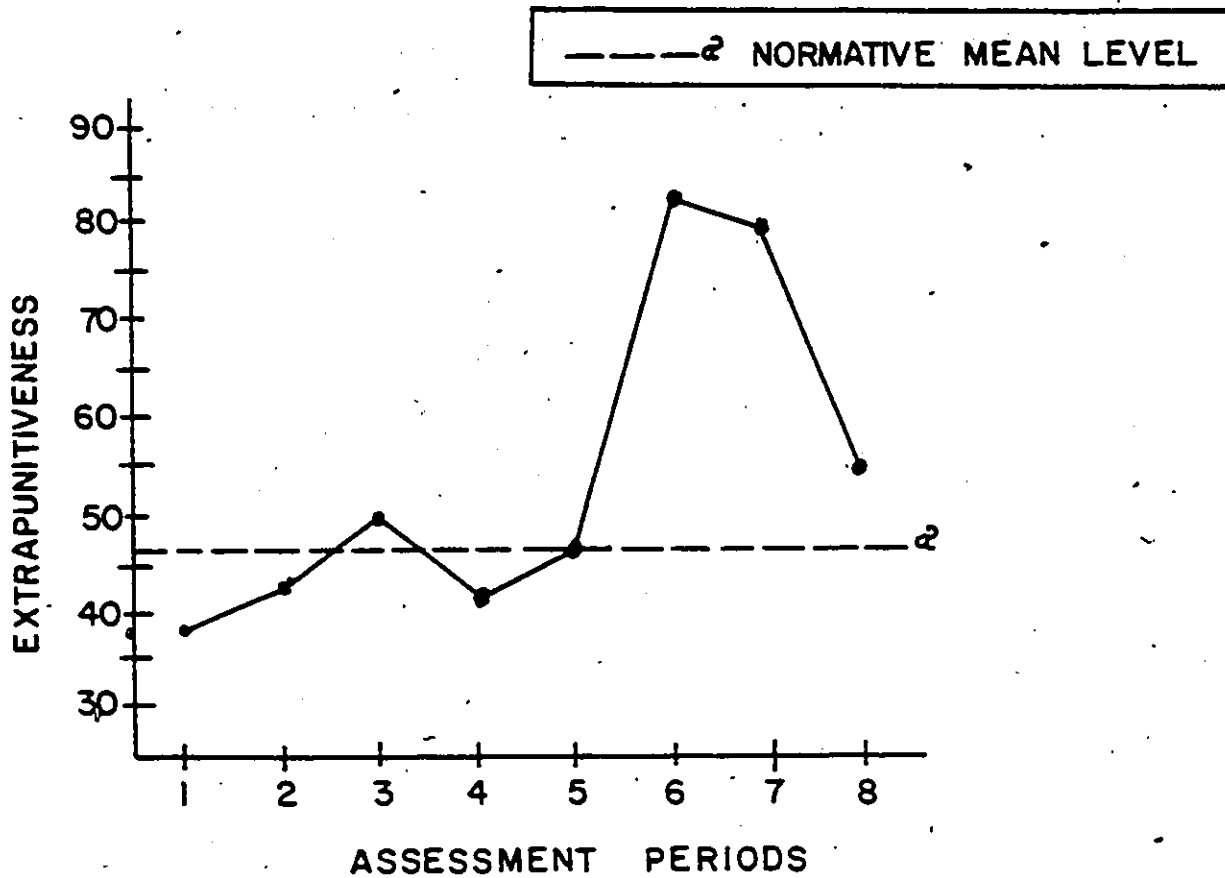
Andrew's total self esteem, as measured by the SEI, fell during the baseline period, from the 58th %ile, to the 48th. Although his score fluctuated widely concurrent with the remediation, it finished generally lower at the 31st. During the followup period it rose back, to the 58th %ile. Most of Andrew's ratings were quite variable during the intervention period, making any interpretation of trends quite speculative. His social-self esteem fell over the remedial period in accordance with baseline trend; home-parental self esteem showed a slight downward change of level by the end of remediation and into the followup and his general self esteem reversed trend every assessment period for the entire study.

As mentioned, the interpretation of such variability is quite speculative. It does point to the lability of Andrew's feelings about himself. This variability was especially evident in Andrew's social self esteem. In comparison to teacher adjustment ratings, Andrew's perception of his success within the social milieu was quite aggrandized during the baseline period. Although not nearly definite, some signs pointed to the stabilization of these feelings, within the average range, by the end of the study.

In summary, because of the extreme variability in score, this second research expectation cannot be supported.

The child's ability to cope with frustration

Andrew's extrapunitive score exhibited a moderate gain over the first three assessment periods rising to just above the mean level (see figure 23). After showing a small dip between periods 3 and 5,



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

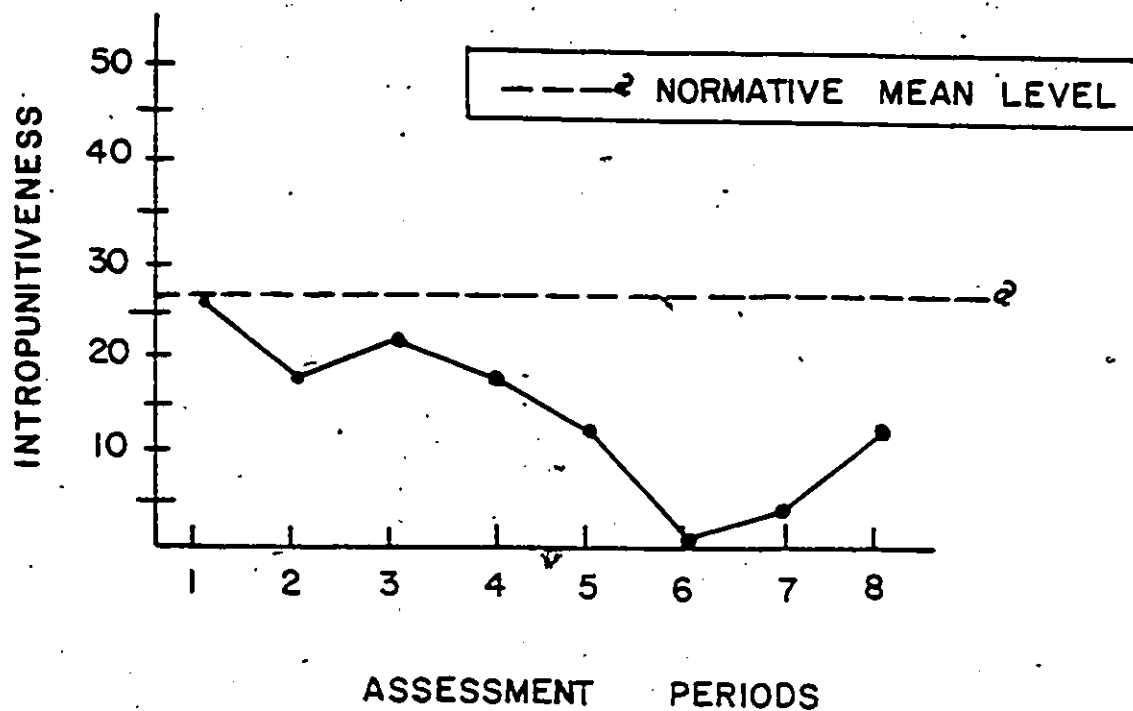
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1976

FIGURE 23: ANDREW'S EXTRAPUNATIVE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

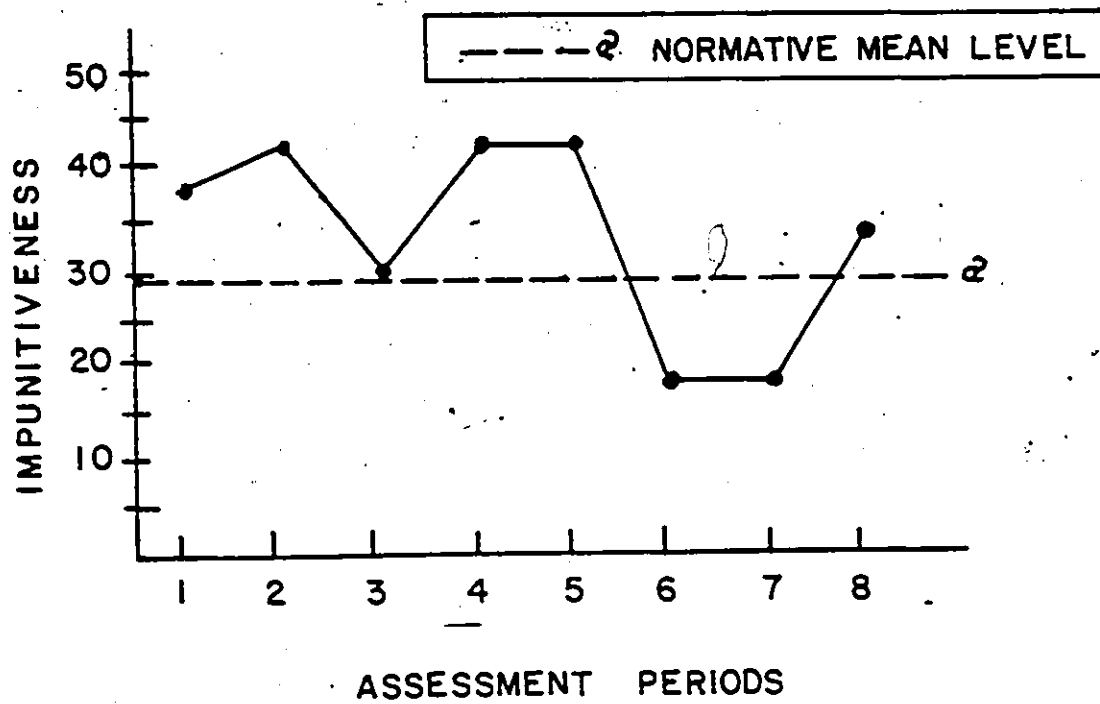
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 24: ANDREW'S INTROPUNITIVE ROSENZWEIG SCORES



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 25: ANDREW'S IMPUNITIVE ROSENZWEIG SCORES.

it exhibited a marked gain by assessment period 6. It then showed only a small downward trend by the end of the remedial period, but fell off markedly over the followup.

Except for small gain between assessment periods 2 and 3, Andrew's intropunitive score fell from an average range to zero responses by assessment period 6 (see figure 24). It showed a moderate rise back by the followup period, but still remained moderately below the normative level.

After showing a small gain over the baseline period, Andrew's impunitive scores dipped between assessment periods 2 and 4, reaching to the mean level at period 3 (see figure 25). This score then remained stable for two months, which was followed by a marked decline between periods 5 and 6, leaving this score moderately below the normative level. It remained at this level until the end of the intervention, then exhibited a moderate gain over the followup period, to just above the mean.

In Andrew's focus of aggression scores, his obstacle-dominance score remained stable for the first four assessment periods, moderately below the normative level (see figure 26). It then rose to the normative level by the end of the intervention, but showed a small decline over the followup period.

As can be seen by figure 27, Andrew's ego dominance score rose moderately over the first three assessment periods, reaching to just above the normative score. It then exhibited an extended dip, reaching its lowest level by period 4, but returning to a normative level by the end of remediation. It showed a small increase over the followup.

Table #9
Andrew's Rosenzweig Responses

Scale	Assessment Periods								Read	Norm
	1	2	3	4	5	6	7	8		
Total Percentage Scores										
Direction of Aggression										
E*	38	42	40	42	46	83	79	84	54.9	46.0
I*	25	17	21	17	13	0	4	13	20.0	25.6
M*	38	42	29	42	42	17	17	33	26.3	28.5
Focus of Aggression										
OD*	4	4	4	4	8	8	17	8	15.4	16.3
ED*	46	50	62	46	54	58	58	63	60.8	65.4
NP*	50	46	33	50	38	38	25	29	24.7	27.2
Broken Down Response Patterns										
Direction of Aggression										
E										
A-C*	6	5	5	5	5	11	11	7	6.3	5.9
C-C*	3	5	7	5	6	9	8	6	7.3	6.9
I										
A-C	3	3	4	3	2	0	1	2	3.8	4.3
C-C	3	1	1	1	1	0	0	1	1.8	1.7
M										
A-C	6	7	6	7	8	4	3	6	4.0	3.7
C-C	3	3	1	3	2	0	1	2	2.7	3.3
Focus of Aggression										
OD										
A-C	1	1	1	1	2	2	4	2	2.3	2.3
C-C	0	0	0	0	0	0	0	0	1.9	1.8
ED										
A-C	5	6	7	4	6	6	5	8	7.4	6.2
C-C	6	7	8	7	7	7	8	7	7.7	7.0
NP										
A-C	9	9	7	19	7	7	6	5	4.4	5.8
C-C	3	2	1	2	2	2	0	2	2.3	3.1

Reading disability norms taken from Spache, 1957.
Normative scores taken from Spache, 1957.

E* - Extrapunitiveness
I* - Intropunitiveness
M* - Impunitiveness
OD*- Obstacle-Dominance
ED*- Ego-Dominance
NP*- Need-Persistence

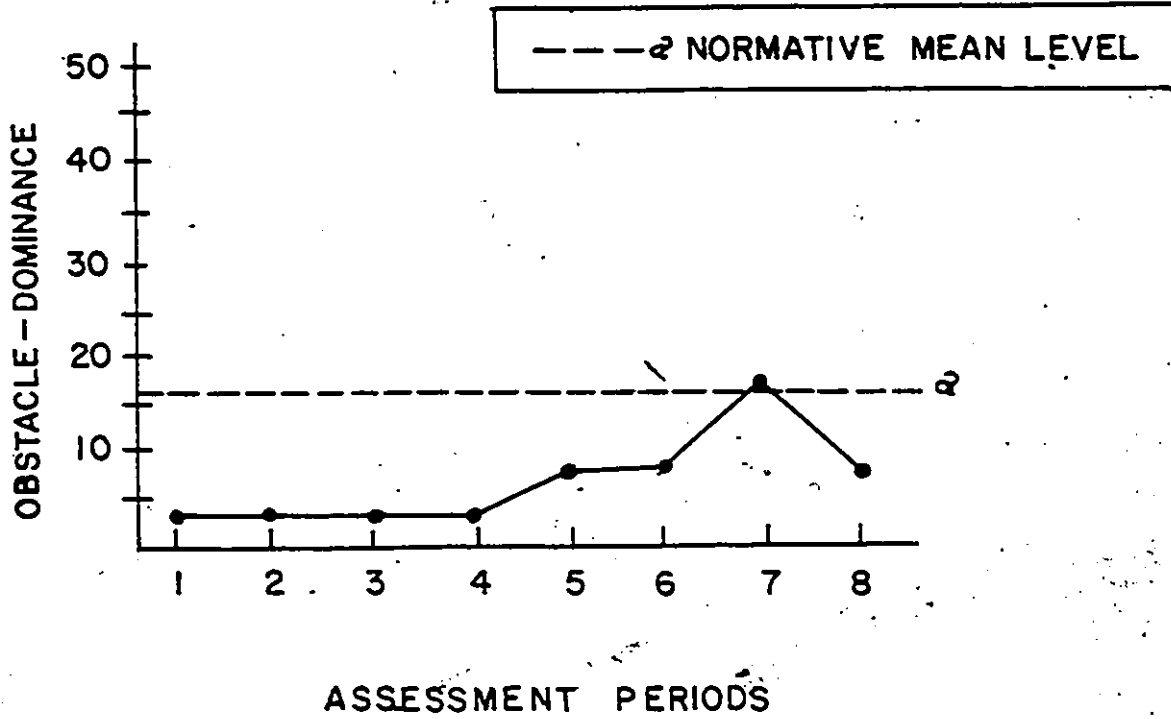
A-C* Adult Child
C-C* Child-Child

Assessment Periods
Baseline Period
1-December 1975
2-February 1976
APP Remedial Period
3-April 1976
4-June 1976
5-August 1976
6-October 1976
7-December 1976
Follow-up Period
8-February 1977

Andrew's need-persistence score, began the baseline period markedly above the normative level for children his age (see figure 28). After falling over the first three periods to just above the normative level, this score rose back to the high level it began the study at. For the remainder of the intervention period, this score generally fell, ending slightly below the normative mean by assessment period 7. It remained fairly stable over the followup period.

The third specific research expectation postulates that there will be a change in the way Andrew conceptually handles frustrating experiences after the remedial period.

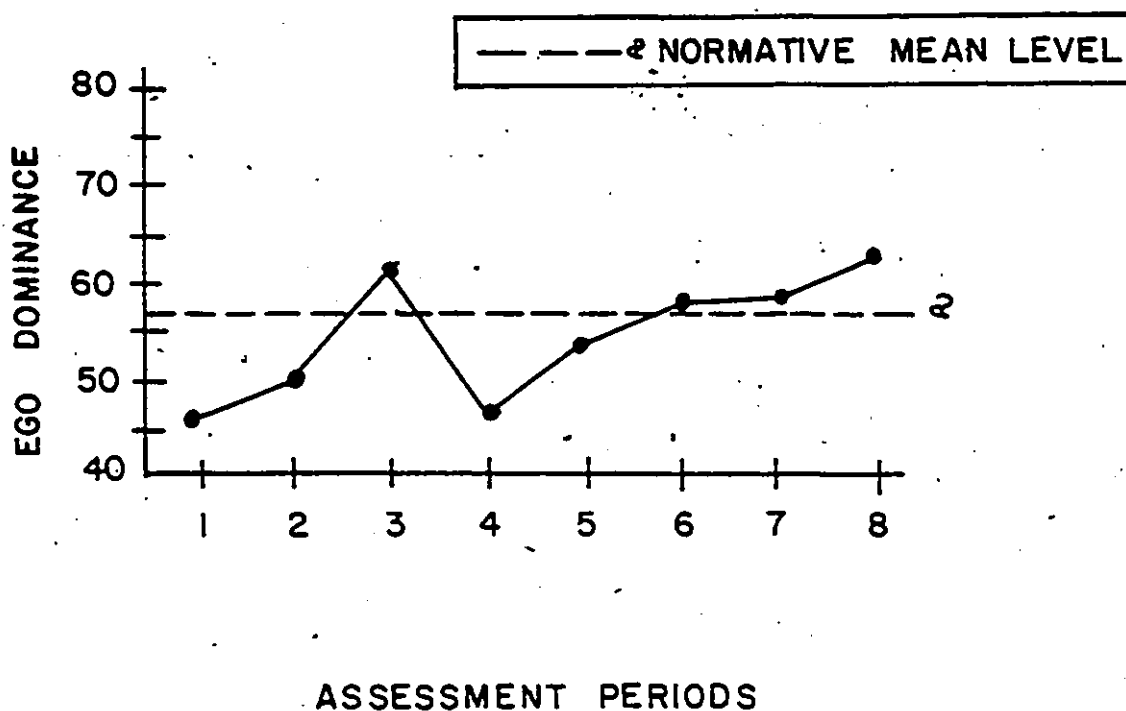
Before the remedial period, Andrew's direction of aggression scores stood with extrapunitiveness (E) and impunitiveness (M) both at 42% of his total responses, and intropunitiveness (I) at 17%. Conceptually then, before remediation, when faced with a frustrating experience, Andrew would either perceive other people as the focus of his frustration and direct his anger at them (E), or gloss over the frustrating situation, minimizing its importance (M), and assume a more passive stance. Andrew's extrapunitiveness responses were equally divided between adults and children (see table), but the impunitiveness score was heavily weighted in favor of adults. By the assessment period following APP, this picture had changed quite dramatically, with E rising to 79% of his total responses and I and M both quite a bit below baseline levels. This picture did change over the followup periods. At the end of remediation, Andrew was directing his anger and frustration at others, abandoning to a large degree, his willingness to gloss over events.



KEY

- BASELINE PERIOD
- 1 DECEMBER 1975
- 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976
- FOLLOW-UP PERIOD
- 8 FEBRUARY 1977

FIGURE 26 ANDREW'S OBSTACLE DOMINANCE ROSENZWEIG SCORES.



KEY-

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

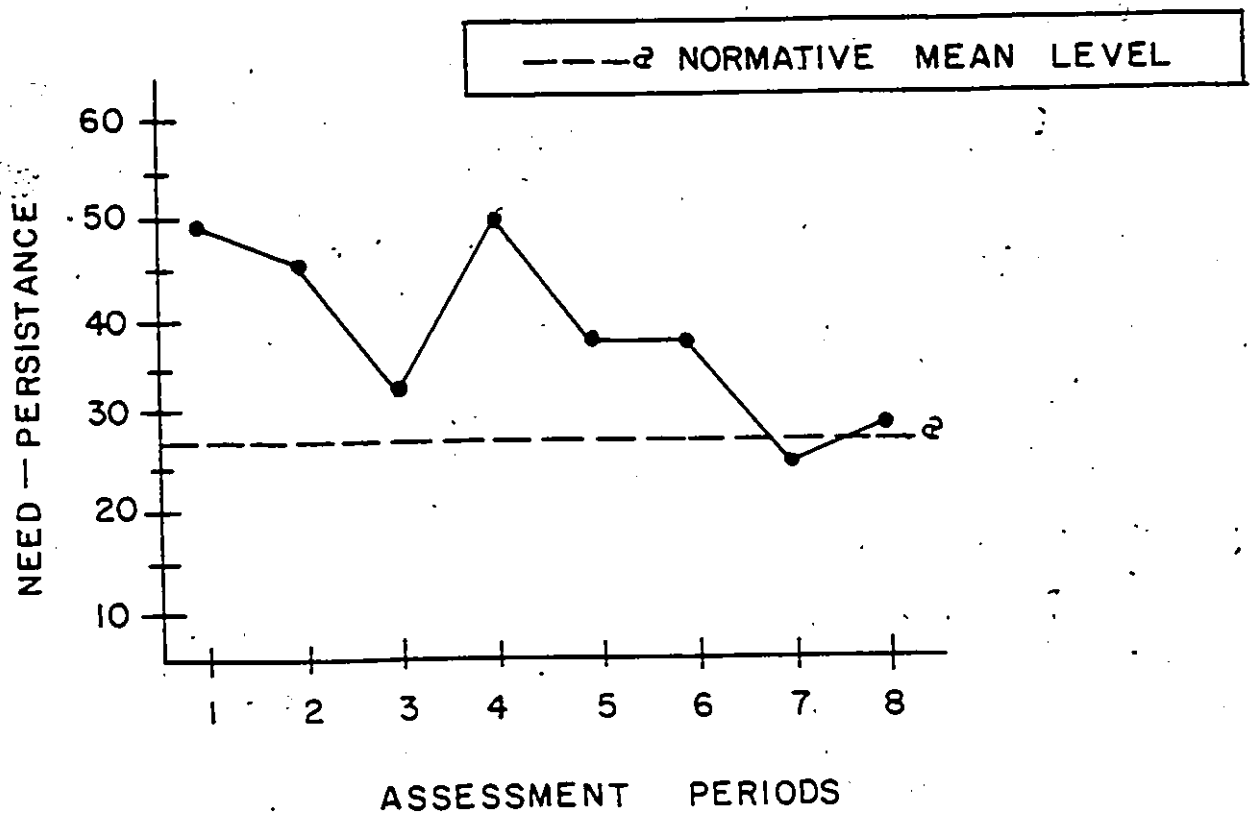
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 27 ANDREW'S EGO-DOMINANCE ROSENZWEIG SCORES.



KEY

- BASELINE PERIOD
- 1 DECEMBER 1975
- 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976
- FOLLOW-UP PERIOD
- 8 FEBRUARY 1977

FIGURE 28 ANDREW'S NEED - PERSISTENCE ROSENZWEIG SCORES.

Andrew's focus of aggression scores also changed concurrent with the remedial period. Before APP, his percentage of responses was: obstacle-dominance-OD-4%; ego-dominance-ED-50%; and need-persistence-NP-46%, (see table 9). After the remedial period, OD had risen to 17%, ED to 58% and NP fell to 25%. The rise in ED and the fall in NP were both in accordance with baseline trends. It would appear to follow that with the rising amount of anger Andrew was directing at his environment, there would be a subsequent rise in the attention he paid toward the obstacle in the frustrating event.

In summary, these results support the third specific research expectation.

The child's personality traits and dynamic organization

Only three of the 13 primary source traits and one second order factor on the CPQ, showed a generalized change concurrent with the intervention period. Other scales (notably A and D), exhibited wide fluctuation during certain phases of APP, but these could be viewed as shorter term modifications. Of the three primary source traits that changed, Factor F rose quite substantially, from a below average sten score to one markedly above that range; Factor I, fell from an average range to a moderately below average level; and Factor Q4, rose substantially, from its average sten score rating. All three of these changes began varying back toward the mean over the followup period. The second order factor of independence showed a definitive upward swing concurrent with the remediation, but then also fell back over the period.

The rise in Andrew's F factor is somewhat in line with the teacher ratings of his self adjustment. This change in score represents a positive alteration in his emotional outlook, from a slightly desurgent pole to one of a happier, more outgoing, positive attitude. The fall in scale I and the rise in the second order factor of independence, both are congruent, and point toward Andrew becoming more self reliant and responsible for his own actions. The lower level of I, also represents a practical, group solidarity generating posture. The independence factor, the authors describe, as relating more to "field independence". At first glance, the rise in factor Q4, ergic tension, appears not to fit with the other changes, especially Factor F. The high level of Q4 would present Andrew as tense and frustrated, sensitively aware of being criticized by parents and teachers. It is interesting to note, that the authors make references to the correlation of this Q factor with a low factor C (ego strength) and a high factor O (guilt proneness).

Both of these factors remained generally within the average range for Andrew during the remedial period. With this in mind, and the changes in the other factors, this upward swing of Q4, could be viewed more positively as a quality driving Andrew toward individuation. In this regard, it might fit well with the extreme variability noticed in his esteem scores.

On the surface, Andrew's SEI ratings of his consciously perceived self image varied tremendously over the remedial period, with only questionable trends. His CPQ results portray a push toward independence and self sufficiency, coupled with a more euphoric attitude, but a large amount of driven ergic tension.

Table #10
 Andrew's CPQ Results for the Baseline,
 APP Remedial and Follow-up Periods

Trait	Assessment Periods				
	Baseline		APP Remediation		Follow-up
	12/75	2/76	7/76	12/76	2/77
Primary Source Traits					
A	5	5	5	1	6
C	6	5	7	5	7
D	5	5	10	6	7
E	4	5	7	7	6
F	4	4	8	8	5
G	4	3	3	3	3
H	5	6	4	6	7
I	5	5	4	3	4
J	6	5	5	8	6
N	7	6	7	9	8
O	6	6	5	5	4
Q	6	6	3	6	4
Q	6	5	9	10	7
Second Order Factors					
Extraversion	4.8	5.1	6.2	5.3	6.0
Anxiety	5.3	5.5	6.9	6.6	5.7
Tough Poise	5.6	6.0	6.5	7.4	6.1
Independence	5.0	5.0	6.1	7.1	5.4

All trait scores are listed in sten scores

Average sten scores for all primary source
 traits are 5 and 6

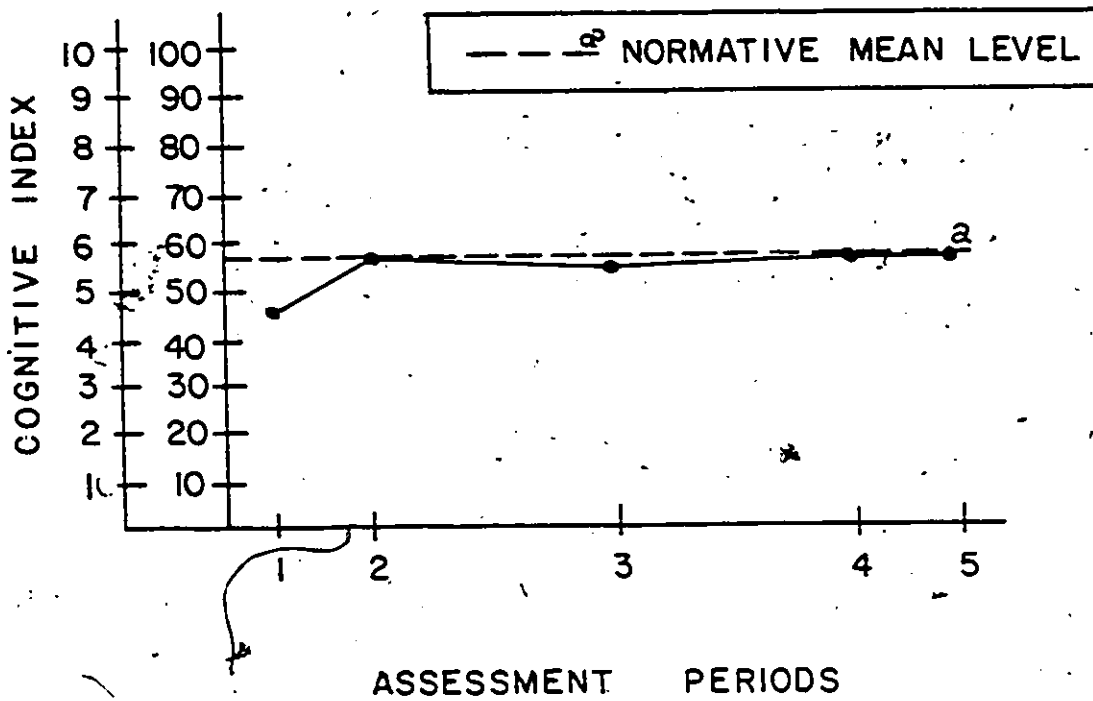
Mean score of second order factors are 5.5, S.D. - 2.0

Teacher ratings point to a strengthened self with fewer signs of overt anxiety. A speculative hypothesis at this time would point to an internalization of psychic energy, which was fueling Andrew's push toward autonomy and individuation. In this process, his identification system, undergoing quite drastic change, exhibited a large amount of variance.

After exhibiting a small upward gain during the baseline period, Andrew's cognitive index, as measured by the Rorschach Developmental Rating Scale, remained fairly stable around the mean for the remainder of the study (see figure 29).

As can be seen by figure 30, Andrew's affective integration as measured by his affective index, was quite variable over the course of the study, exhibiting marked fluctuation. Much of this fluctuation was directly due to the absence, or presence of determinants in Andrew's protocol. As evidence by his F% (see table), during the first baseline assessment period, he gave no determinant responses. This F% dropped substantially to 63% before remediation, then rose back to 88% after the first 5 months of APP. It then fell again to 50% by the end of the remedial period, and increased by a small degree to 57% after the followup period.

Andrew's personalization index exhibited a marked gain over the baseline assessment period, then remained fairly stable for the first five months of intervention, showing only a minimal downward change (see figure 31). Over the last five months of remediation and into the followup period, this index rose markedly, to above the mean level for children his age.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

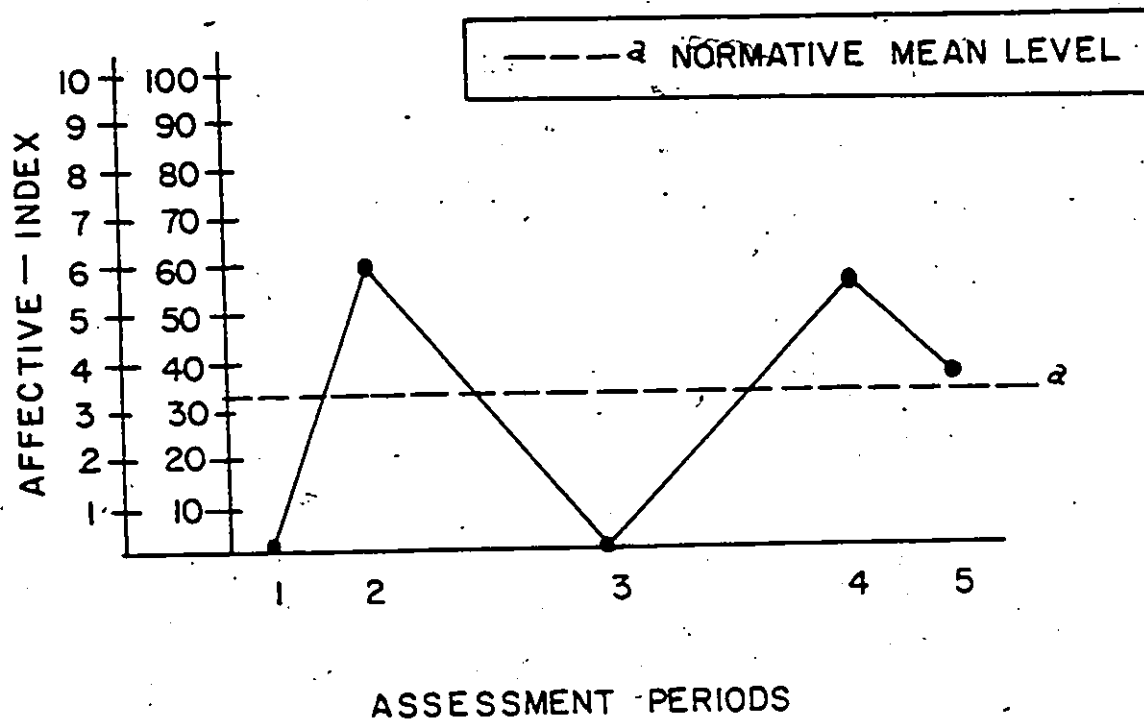
3 JULY 1976

4 DECEMBER 1976

FOLLOW-UP PERIOD

5 FEBRUARY 1977

FIGURE 29 ANDREW'S R.R.S. COGNITIVE INDEX.

KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

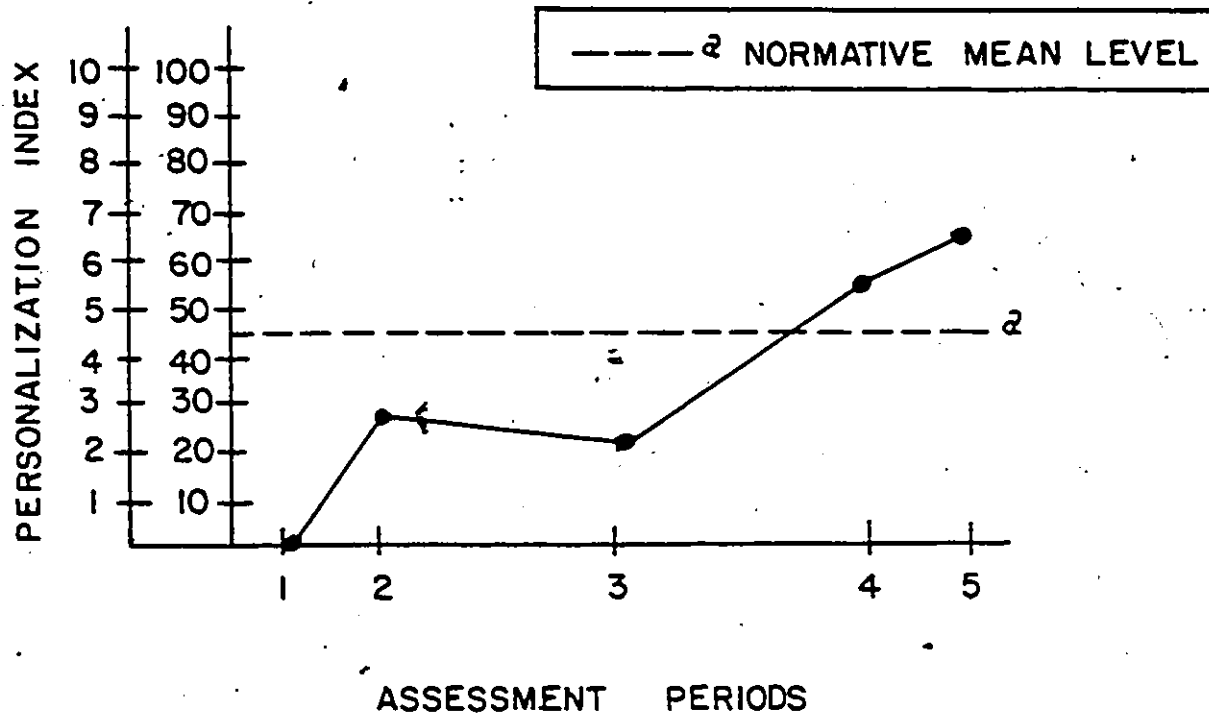
3 JULY 1976

4 DECEMBER 1976

FOLLOW-UP PERIOD

5 FEBRUARY 1977

FIGURE 30 ANDREW'S R R S AFFECTIVE INDEX.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 JULY 1976

4 DECEMBER 1976

FOLLOW-UP PERIOD

5 FEBRUARY 1977

FIGURE 31 ANDREW'S R R S PERSONALIZATION INDEX.

The fourth and final specific research expectation postulates a change in Andrew's underlying personality organization to be evidenced in cognitive and affective integration, as well as in the structuring of his experience.

The most striking aspect of Andrew's Rorschach protocol during the first baseline period is his F%, which stood at 100%. This is highly indicative of pathology (Piotrowski; 1974), and is reflective of a highly constricted personality organization. The average F% for his age, is between 52% and 58% (Ames et. al 1974). This constricted makeup is indicative of a rigidity in functioning and a high degree of undifferentiated response patterns, both toward external interaction and internalized thought.

His overall protocol improved before the remedial period, with his F% falling to 68% of his responses. He produced 1 FM, 1 FK, 1Fc and 4FC responses before the remedial period began (see table 11). These changes were noticed in his developmental ratings as well, as his affective index, rose from 0 to 6, and his personalization index, rose from 0 to 2.8.

During the first five months of intervention, his protocol is suggestive of a regression functioning, as F% rose and both his affective and personalization index's both fell.

By the end of the remedial period, Andrew's protocol exhibited some dramatic improvement. His affective index rose back, and his personalization index rose to substantially higher levels. This change was mostly attributed to the appearance of a human movement response as well as an increase in both animal movement and shading responses (see table 11). Although his affective index fell

Table #11

Andrew's Rorschach Responses

	Baseline 12/75	Period 2/76	Assessment Periods		
			Remedial Period 7/76	12/76	Follow-up 2/77
Total R	13	19	8	22	21
Location Scores					
W%	38	26	13	23	19
D%	38	53	63	64	62
d%	15	11	0	5	14
Dd%	8	11	25	9	5
Determinant Scores					
F%	100	68	88	50	57
M	0	0	0	1	1
FM	0	1	1	5	3
m	0	0	0	0	0
FK	0	1FK	0	1FK	1FK
Fc	0	1	0	2	0
FC	0	0	0	0	1
FC	0	4	0	3	2
CF	0	0	0	0	1
C	0	0	0	1	0
Quantitative Scores					
M:FM	0:0	0:1	0:1	1:5	1:3
Sum C	0	2	0	4	1
FC:CF+C	0:0	4:0	0:0	2:3	2:1
M:Sum C	0:0	0:2	0:0	1:4	1:2

slightly over the followup period, his personalization index continued strong gains.

This pattern of protocol change is quite remarkable, considering the level at which it began. The striking change is evidenced in the improvement of his personalization index by the end of APP and its strengthening during the followup. According to its author (Mook 1977), this index is indicative of the level of differentiation that the child has achieved both in relation to himself and others, or his degree of humanization.

The improvement which Andrew showed in this area was across both of the subscales (8 and 9) of the index. This improvement appears to reflect the substantial amount of dynamic growth that Andrew achieved concurrent with the remediation process. He began perceiving himself as clearly distinguishable from others, indicative of a growing self structure from which his interactions can be directed and maintained. Developmentally, Heinz Werner (1942), talks about the structure of organization of the child gradually changing, from a syncretic fusion to a more articulated one. Along both these developmental continuum, Andrew's personalization index showed dramatic improvement. With the improvement in the internalization of structure, Andrew's dynamic organization can be seen as becoming more discrete and self structured, and more articulated, because he could now benefit from his experimental involvement.

Over the entire study, Andrew's developmental rating of his affective integration was quite labile, rising one period and falling the next. This pattern stabilized slightly, between the end

Table 12

Andrew's Developmental Rorschach Rating Scale Scores

Scale	Baseline Period		Scoring Periods		
	12/75	2/76	Remedial Period 7/76	12/76	Follow-up Period 2/77
*C.I.	4.40	5.50	5.40	5.50	5.70
*A.I.	0.00	6.00	0.00	5.70	3.80
*P.I.	0.00	2.80	2.00	5.30	6.30
A					
(1)	2.80	3.00	3.00	2.60	3.00
(2)	3.00	2.50	2.40	2.80	2.80
(3)	3.00	2.50	2.40	2.70	2.70
(4)	0.00	3.00	3.00	2.80	2.80
B					
(5)	0.00	3.00	0.00	2.70	2.30
(6)	0.00	3.00	0.00	3.00	3.00
(7)	0.00	3.00	0.00	3.00	0.00
C					
(8)	0.00	1.00	1.00	2.60	3.25
(9)	0.00	1.80	1.00	2.70	3.00

a 0 indicates no scorable responses given

A - Cognitive Integration

- (1) Whole Part Responses
- (2) Part Responses
- (3) Form Level
- (4) Form-Controlled Determinants

B - Affective Integration

- (5) Form-Color Integration
- (6) Form-Shading Integration
- (7) Texture Integration

C - Personalization

- *C.I.-Cognitive Index
- A.I.-Affective Index
- P.I.-Personalization Index

- (8) Quality and Balance of Movement
- (9) Quality and Balance of Movement, Shading and Color

The major change which occurred concurrent with the remediation could be termed as a striving for separation and independence. On a behaviorally viewed level, his teacher saw his self adjustment rise substantially to within the average range. His overall mood was seen as elevated, there were less overt signs of tension and his general behavior appeared more stable. Teachers also noticed Andrew was less fearful and more willing to take the first step toward interaction with both peers and adults.

Although Andrew's mother's ratings fell over the remediation, they might broadly be seen as indicative of the same trend. He was showing his temper more, willing to speak his mind, both of which disrupted the flow of the house and was seen by his parents as different from the norm.

Andrew's responses on both the SEI and the CPQ, portray that he was having some difficulty feeling comfortable, especially in his social interactions. On a theoretical level, the varying subscales of the SEI measure what has been termed the "consciously perceived self" (Rogers 1951), or the "phenomenal self" (Buhler, 1962). Rogers defines its boundaries quite specifically, as those perceptions which are admissible to awareness. Developmentally, according to both these sources, the self develops out of what is conceptualized as "trust and thrust". The secure relationship provides the faith for the emerging self to reach into the world of interaction. With reference to these theoretical positions, with Andrew's increasing amount of positive social interaction, his previously held conceptions of his relationship within his milieu began fluctuating and changing.

of remediation and the followup period, but it was still indicative of a less mature pattern.

Andrew's cognitive index did not exhibit any strong change concurrent with the remedial period, but it did begin to show minimal signs of improvement over the followup period.

In summary then, it was postulated that Andrew's personality organization would change over the remedial period. This change was hypothesized to occur across all three of his developmental index's: cognitive, affective and personalization. With respect to this, this last specific research expectation can only be partially supported. Cognitive integration did not appear to change parallel to the remediation, although some signs point to an improvement following the intervention period. Andrew's affective index remained somewhat labile, although signs here, also point to a stabilization trend following the remediation. The major change was realized in Andrew's personalization index, which showed a dramatic improvement both in the structuring of his internal experience as well as, in his ability to interact with his environment.

Summary of Psycho-Social Results

In Andrew's case, his academic improvement appears comensurate with the change in his psycho-social/personality variables. Before the intervention, Andrew's self, social and school adjustment were all rated by his teacher, in the maladjusted range. During this time as well, the Rorschach revealed a fairly constricted personality organization, especially in his ability to internalize experience and successfully differentiate himself from others.

Child #3-BrianAPP Remedial Programming

After only 30 sessions listening to filtered mother's voice, Brian appeared ready to move onto the sonic birth process and subsequent training phase. Sonic birth was accomplished over five sessions and the training sessions began. At the beginning of the training phase, it became obvious Brian was having a lot of difficulty understanding the words presented and was tiring easily. These behavioral indications pointed to the fact that Brian was not ready for this phase. After consultation, Brian was returned to the passive program. In total, Brian received 64 passive sessions and the sonic birth was re-introduced by mid April. Brian's listening test showed that selectivity had opened and all spacialization errors had disappeared (see figure C, page).

The performance phase of remediation was arduous for Brian. He experienced difficulty in repeating words and phrases and required a lot of encouragement from the program assistant. In all, this phase lasted until early November and consumed over 220 sessions.

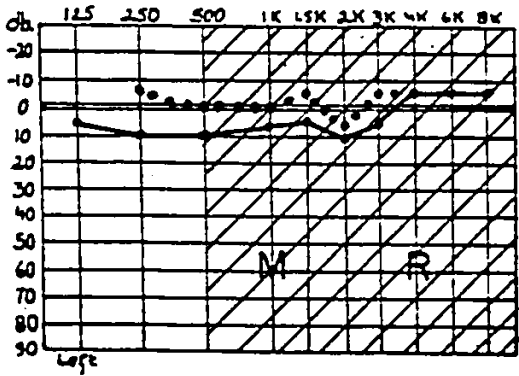
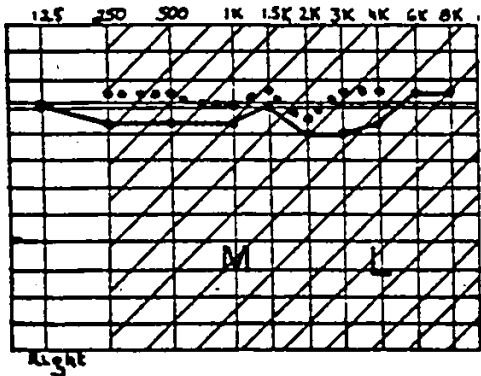
The training phase was relatively short for Brian since the previous stage took up so much time. It consisted of only three weeks of reading simple grade one books, alternating with sessions of classical music.

Criterion Results

Out of all of the five children in this study, Brian's criterion results are the least impressive (see table). The Myklebust learning quotient gained only 1 point over the remedial period, rising from 80 to 81. This score is still well below the

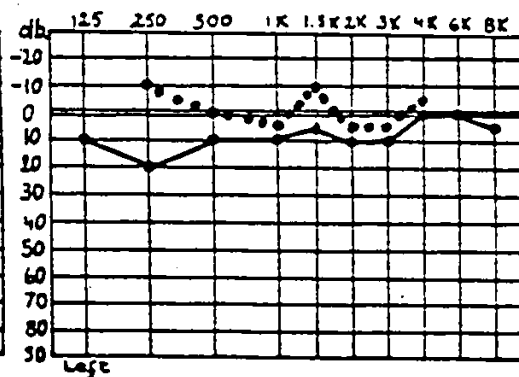
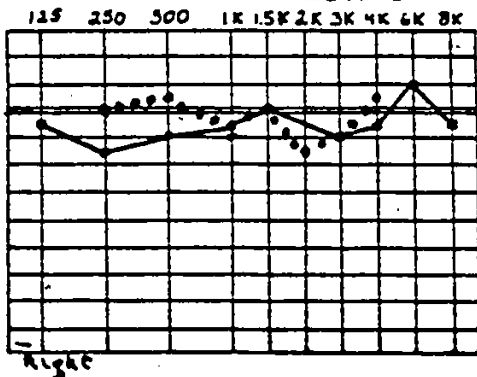
Date: **BASELINE TESTING**

193
Hz.



Examiner: _____

Date: **FOLLOW-UP TESTING**



Examiner: _____



DIAGONAL LINES ARE INDICATIVE OF THOSE FREQUENCIES WHERE AUDITORY SELECTIVITY WAS CLOSED, AS MEASURED BY AUDITORY DISCRIMINATION (TOMATIS 1978)



THE NUMBER WITHIN SIDE THE BOX INDICATES THE STRENGTH OF AUDIOLATEROMETRY (TOMATIS LATERALIZATION TEST.)

R-L-M

A LETTER WITHIN GRAPH INDICATES SPECIALIZATION ERROR.

BONE CONDUCTION CURVE

AIR CONDUCTION CURVE

FIGURE-C- TOMATIS LISTENING TEST CHILD 3 BRIAN.

Table #13

Brian's Academic Testing Scores for
Baseline, APP and Follow-up Periods

Test	Scoring Periods							
	Baseline Period			APP Remediation			Follow-up	
	11/75	2/76	4/76	6/76	8/76	10/76	12/76	2/77
W.I.S.C.-R								
Verbal I.Q.	101							102
Performance I.Q.	131							102
Full Scale I.Q.	117							117
WRAT								
Reading	1.9	1.8	2.0	1.7	2.3	2.3	2.5	2.7 ^a
Spelling	1.3	1.5	2.0	2.0	2.2	1.8	2.2	2.5
Arithmetic	2.2	2.2	2.8	2.8	3.0	3.2	3.2	3.6
Gates-McGinitie								
Vocabulary	1.9	1.7	2.1	1.9	2.2	2.5	2.0	2.8
Comprehension	1.5	1.5	1.7	1.6	1.7	1.6	1.6	2.3
Composite Academic Index	1.8	1.75	2.1	2.0	2.3	2.3	2.3	2.8
PBRS								
Verbal	23	24					24	
Non-Verbal	43	43					46 ^b	
Total	66	67					70 ^c	
L.Q.	80						81	

^aAll scores are in grade equivalents by year and month

^bHighest score is 120, with 70 being the accepted cutoff for L-D.

^cCutoff score for learning disabilities is 89.

cutoff score for learning disability of 89. Results of the Myklebust Pupil Behavior Rating Scale also revealed only minimal progress. Before remediation, his score was 67 and it rose to only 70 by the end of APP. Although this score reached the cutoff score for criteria, this progress could be seen as minimal.

Tomatis' criterion for dyslexia (listening test and audiometerometry) exhibited mixed results over the remedial period. On the positive side, selectivity opened on both ears and spacialization errors disappeared. Also, both air curves in the lower frequencies exhibited slightly more ascendance. Bone conduction, for the most part, remained above the air curves and attempts at auditory lateralization had failed, as Brian's left ear still maintained a 1.5 advantage. Although some progress had been made, the failure of the lateralization process could not judge Brian's APP training as successful (Tomatis, 1978).

The final criterion, Brian's composite academic index, also showed only minimal gains. Intervention scores did reveal a positive reversal of the baseline trend, but over the 10 month period, Brian only gained five months on this score. On a more optimistic note, this index showed considerable gain (five months) over the two month followup period.

How Significant others view the child

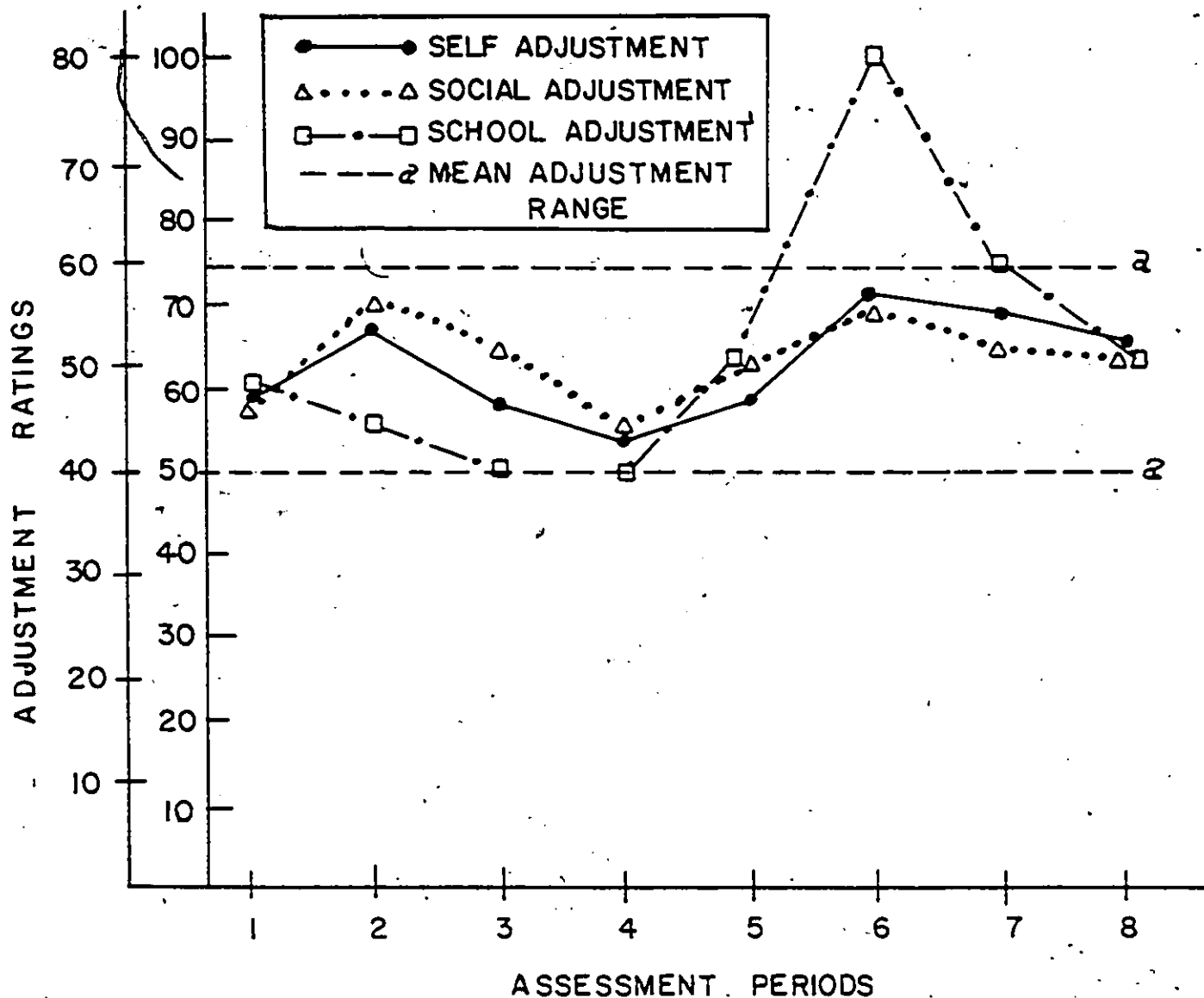
As can be seen by figure 32, unlike the preceding two children, Brian's teacher rated adjustment scales all began the baseline period within the average adjustment range. At no point in the study did any of these three scales fall below this range.

Brian's self adjustment score exhibited a small rise over the baseline period. After showing a moderate decline between assessment periods 2 and 4, falling to a low average level, this score rose moderately by period 6, reaching a high average mark. Between assessment periods 6 and 8, this score exhibited a small decline, leaving its level roughly the same, at the end of the study, as when the intervention period began.

Brian's social adjustment score also rose during the baseline period, but by a moderate degree, reaching a high average range. The slope of this line generally paralleled that of his self adjustment rating; falling moderately by period 4, rebounding by period 6, then falling off by a small degree by the end of the study.

Unlike his other two adjustment scales, Brian's school adjustment score fell during the first three assessment periods, reaching a low average score. After remaining stable for two months, it rose markedly by assessment period 6, to well above the average adjustment range. It then fell by a substantial margin over the final two assessment periods leaving this adjustment score at the same level by period 8, as it was in period 1.

Brian's self adjustment, as measured by his parents (see figure 33), exhibited a moderate downward trend during the baseline period, falling from the low average range to moderately below this level. After remaining relatively stable at this level until assessment period 4, it then showed a moderate rise back to within the average rating range. It remained fairly stable at this level for the remainder of the study.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

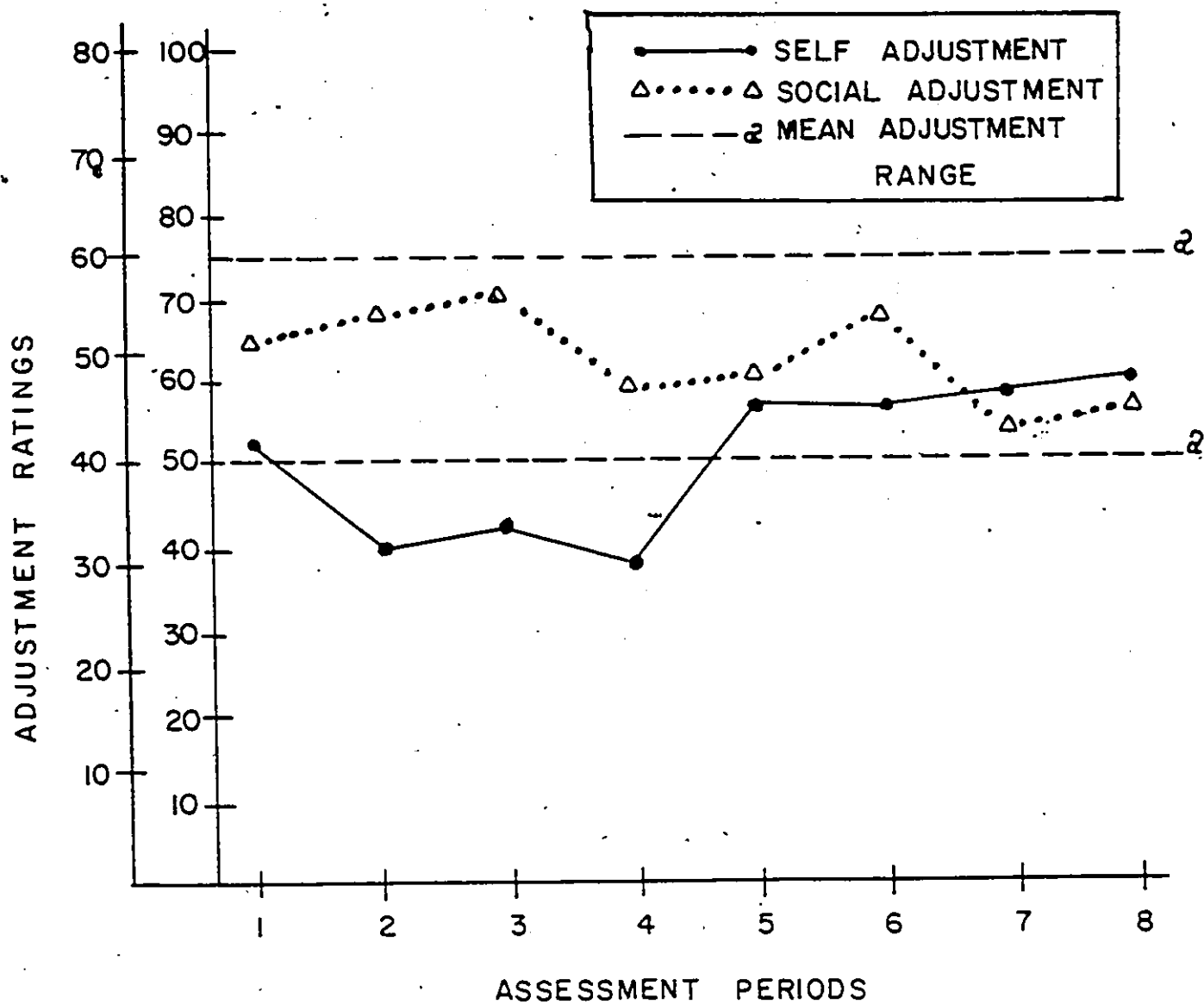
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 32 BRIAN'S ADJUSTMENT RATINGS ON THE CHILD BEHAVIOR RATING AS MEASURED BY HIS TEACHER.



KEY

BASELINE PERIOD

1 DECEMBER 1975
2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976
4 JUNE 1976
5 AUGUST 1976
6 OCTOBER 1976
7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

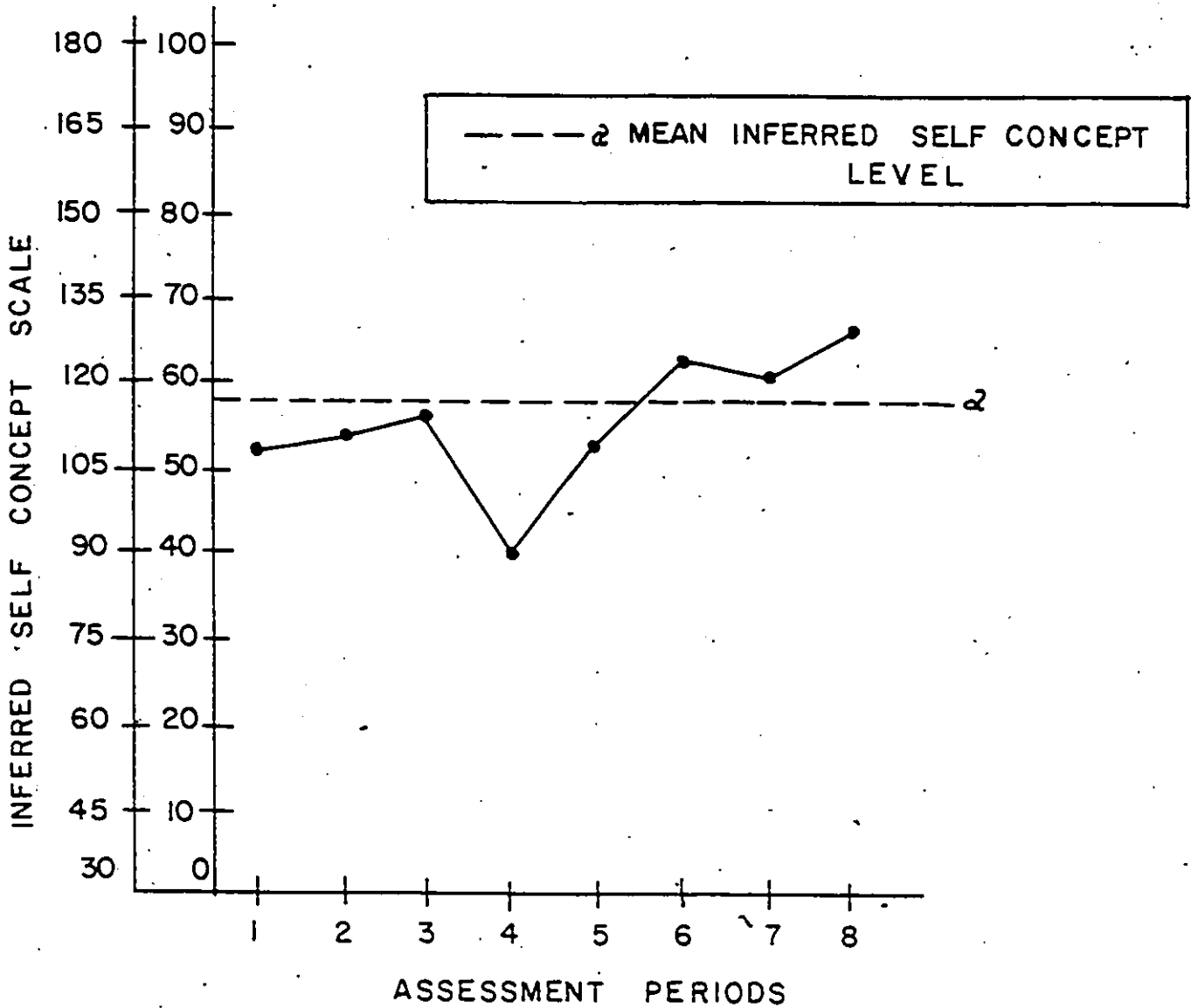
FIGURE 33 BRIAN'S ADJUSTMENT RATINGS ON THE CHILD BEHAVIOR RATING SCALE AS MEASURED BY HIS PARENTS.

As can be seen by figure 33, Brian's parental rating of his social adjustment rose by a small degree over the first three assessment periods, to a high average range. It then exhibited a moderate decrease by period 4, which was followed by a two month stable period, and a small rebound by assessment period 6. It then fell again to a low average range by period 7, and remained fairly stable at that level, over the followup period.

Figure 34, which shows Brian's inferred self concept as measured by his teacher, reveals that this score remained fairly stable over the first three assessment periods, just below the mean level. It then exhibited a moderate-marked dip between assessment periods 3 and 6, ending this time just above the mean level. It remained fairly stable for the remainder of the study, showing only a small increase over the followup period.

The first specific research expectation postulates that there will be a positive change in the way significant others view Brian's social and self adjustment over the remedial process.

Neither Brian's self nor social teacher rated adjustment scales, exhibited any major change concurrent with the remedial process. Both of these scores remained at relatively the same levels after the followup period that they showed during the baseline. Ratings on Brian's self adjustment scale did indicate a minimal improvement in his ability to pay attention in class, as he began to show less of a tendency to daydream. On his social adjustment scale, ratings did indicate that, over the remedial period, Brian was feeling slightly less secure within his peer



KEY

BASELINE PERIOD

- 1 DECEMBER 1975
- 2 FEBRUARY 1976

APP REMEDIAL PERIOD

- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976

FOLLOW-UP PERIOD

- 8 FEBRUARY 1977

FIGURE 34: BRIAN'S INFERRED SELF-CONCEPT AS MEASURED BY THE INFERRED SELF-CONCEPT SCALE.

group, and that he was having a little more difficulty making and keeping friends.

Although his school adjustment scale exhibited wider fluctuations than the above two scales, it also showed little if any general improvement concurrent with the remedial period. There was a moderate upward change in level between the baseline period and the end of the remediation, but this quickly decayed over the followup period. Ratings did suggest a slight positive change in two areas. First, Brian was seen as being better able to express himself, and second, he was less distractable while doing his work.

Mother's rating of Brian's self adjustment showed a small improvement in two areas: Brian's emotional maturity and his ability to delay his actions and think first. Emotionally, mother saw Brian as crying less for no reason and then not sulking as much when things didn't go his way. She also noticed that he wasn't preferring to be alone as often and when he was with other people, he took their criticisms more in stride.

Mother's rating of Brian's social adjustment fell over the remedial period, after showing a minimal ascending trend during the baseline. In this area, the items she felt changed were in line with his teacher. She saw Brian as having a little more difficulty making and keeping friends, and feeling slightly less secure with his peers (it should be emphasized that this was a minimal change across a number of items).

Brian's teacher rating of his self concept as measured by the Inferred Self Concept scale exhibited a small upward change in level concurrent with the intervention period. The major change that was

noticed, was a lessened amount of fear he showed both in relation to his interactions with adults and his interactions with peers.

In summary, although some small gains were noticed in Brian's self and school adjustment, this change was not sufficient to support this first specific research expectation.

How the child views himself

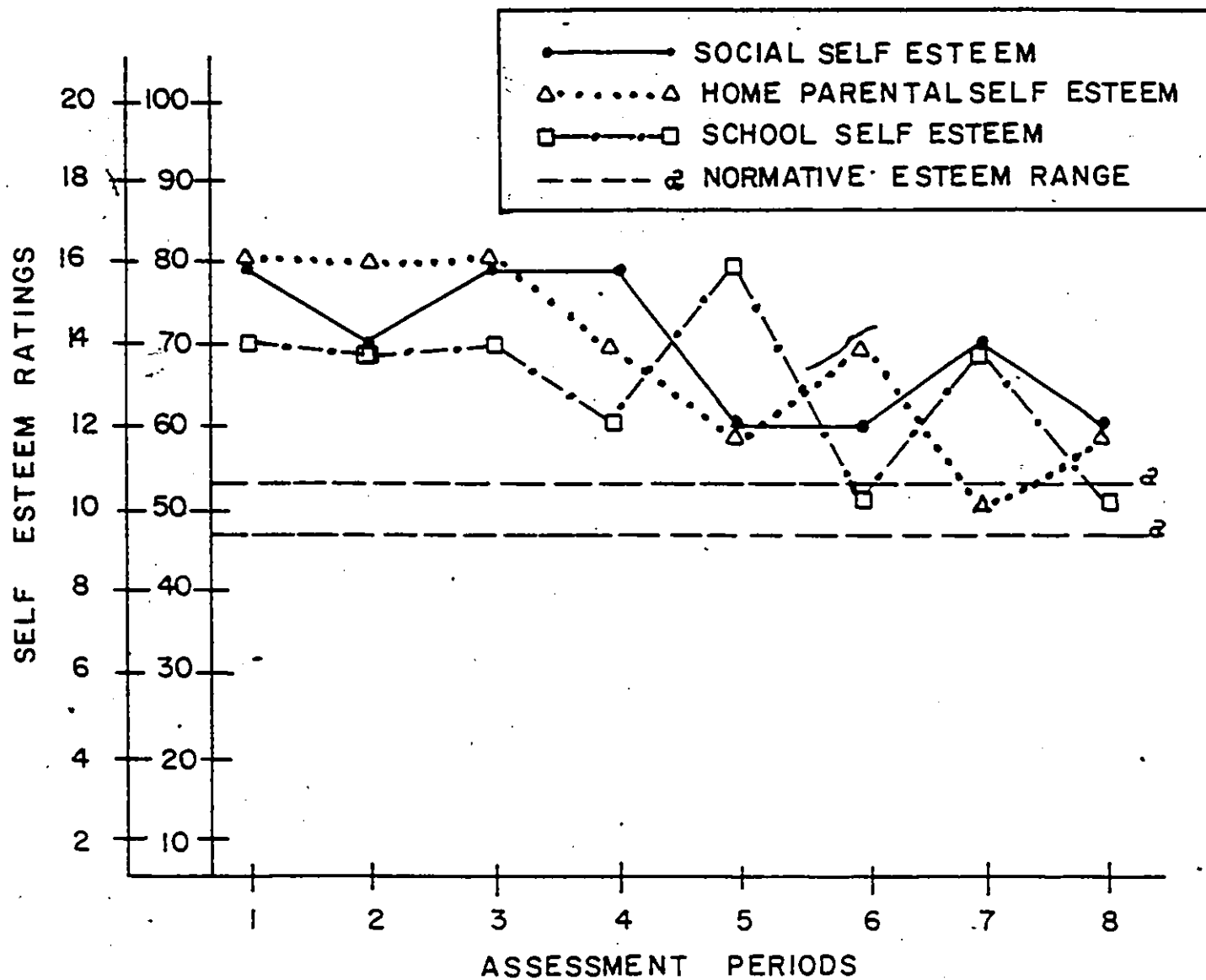
All five of Brian's self esteem scales were at least 1 standard deviation above the mean range, during the baseline period.

As can be seen by figure 35, Brian's social self esteem score dipped over the first three assessment periods, then levelled off until period 4. The major change in this score came between periods 4 and 5, as it showed a marked decline, almost reaching mean levels. After remaining stable for two months, it then spurted over the final three assessment periods finishing the study just above the mean level.

Brian's home-parental esteem score remained stable for the first three assessment periods, then exhibited a marked decline between periods 3 and 5. This score then spurted between assessment periods 5 and 7 reaching to within mean levels by period 7. It exhibited a moderate rise over the followup period.

After remaining stable during the baseline period, Brian's school self esteem became quite variable for the remainder of the study. It exhibited two marked spurts between assessment periods 4 and 6 and 6 and 8, eventually ending the study within the mean range.

After remaining stable over the two month baseline period, Brian's general self esteem showed a marked decline by the fourth



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 35 BRIAN'S SPECIFIC SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.

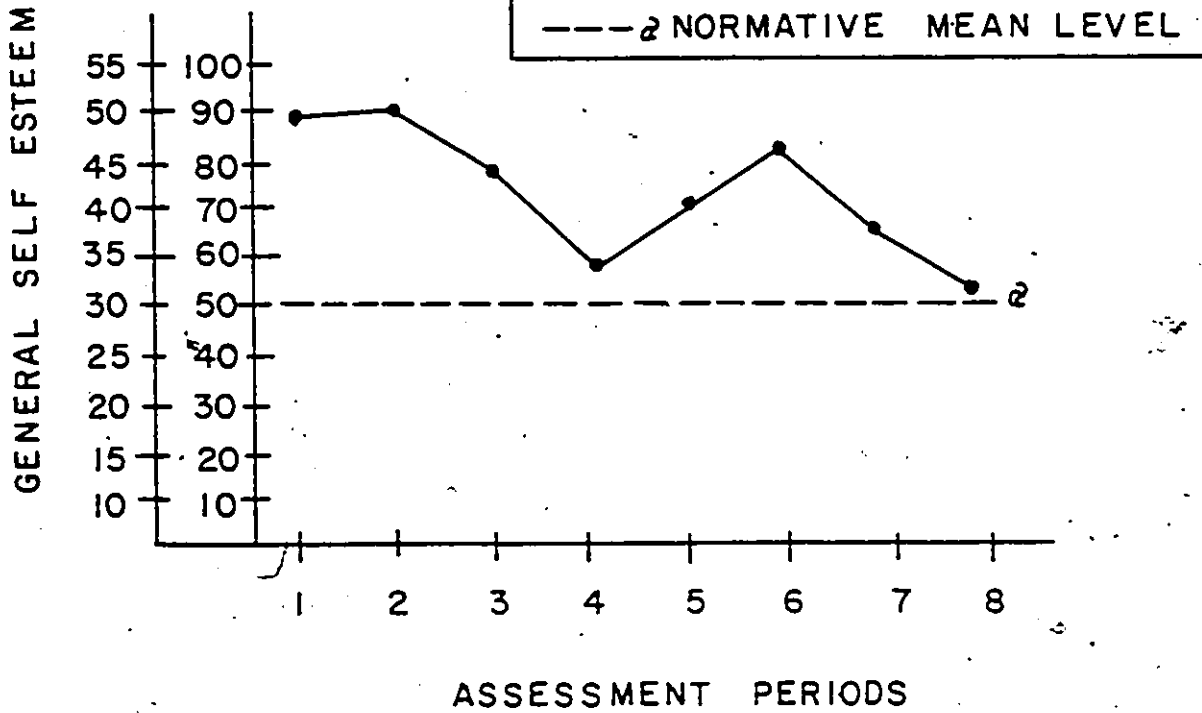
assessment period, almost reaching to the mean level (see figure 36). Over the remainder of the study, Brian's general self esteem exhibited an extended spurt, rising markedly by assessment period 6, then falling by a slightly larger margin by period 8.

As can be seen by figure 37, Brian's total self esteem level generally exhibited a downward trend for the majority of the study, ending slightly above the mean level by assessment period 8. The only exception to this trend was between periods 4 and 6 when this total self esteem score exhibited a moderate increase.

The second specific research expectation hypothesizes a positive change, over the remedial period, in the way Brian views his own self worth.

Scores on Brian's SEI are quite interesting, with all of the subscales and his total self esteem score at least 1 S.D. above stated norms, during the baseline period. In all aspects then, Brian's attitudes about his milieu and his worth within his different roles were all very positive.

Two of the subscales of the SEI, home-parental esteem and general self esteem, remained stable during the baseline period. Both exhibited a general downward trend over the intervention, ending within one standard deviation of the mean at the end of the study. Brian's school self esteem also exhibited variation over intervention, eventually ending at the same level as during the baseline period. Brian's rating of his social self esteem exhibited a slight decline over the baseline period and virtually no change concurrent with the remediation.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

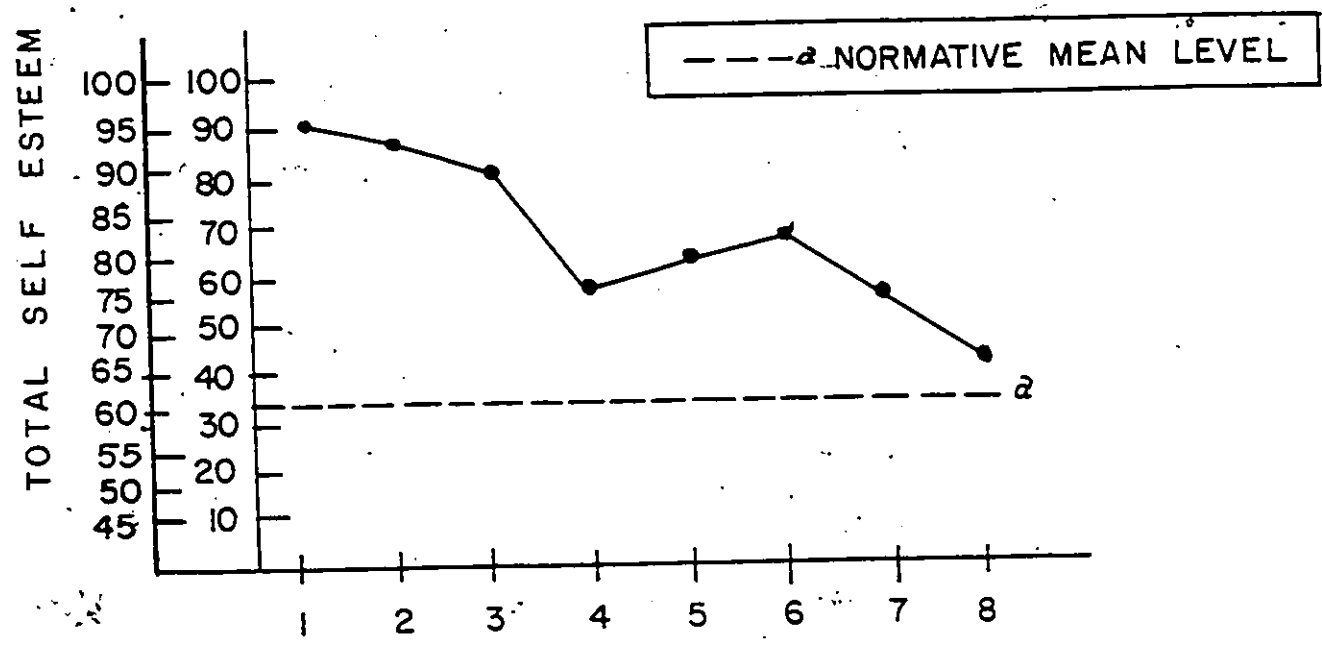
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 36 BRIAN'S SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.



KEY

- BASELINE PERIOD
 - 1 DECEMBER 1975
 - 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
 - 3 APRIL 1976
 - 4 JUNE 1976
 - 5 AUGUST 1976
 - 6 OCTOBER 1976
 - 7 DECEMBER 1976
- FOLLOW-UP PERIOD
 - 8 FEBRUARY 1977

FIGURE 37 BRIAN'S SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.

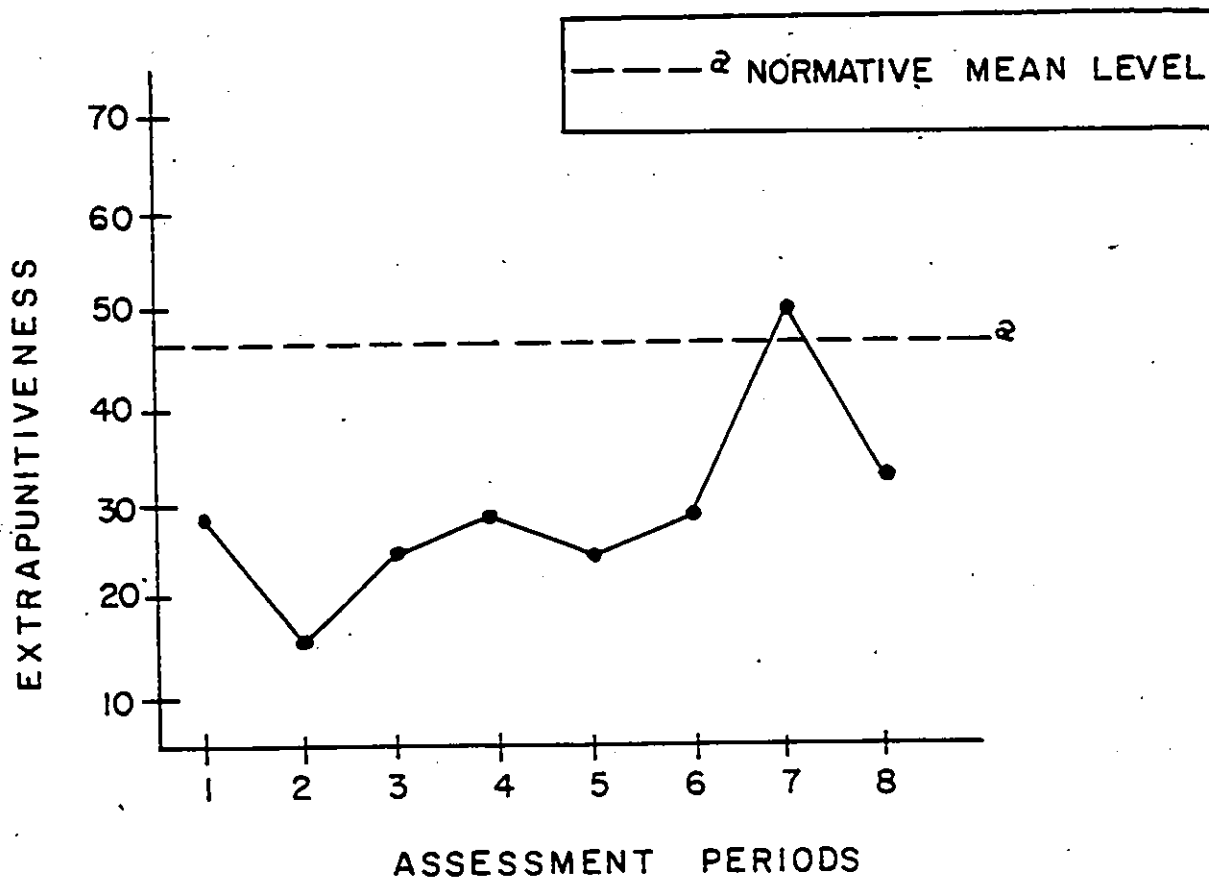
Coopersmith (1967) views the child's self esteem as a set of selectively weighted perceptions which are abstractions of the common features of the child's experiences. Being abstractions, some of these beliefs tend to be over-emphasized, but through the normal developmental process, the child's perceptions will become more realistic. In Brian's case, considering both his achievement and his ratings by other's, his esteem ratings during the baseline period were slightly over exaggerated. By the end of the remedial process, two scores, home-parental and general esteem, appeared to fall to more realistic levels. By the of the followup period, all of Brian's esteem ratings had fallen to more realistic levels.

Brian's feelings of self worth did not become more positive over the intervention period, but did appear to become more realistic in relation to his mileau and abilities. Because of this, this second research expectation can be only partially supported.

The child's ability to cope with frustration

As can be seen by figure 38, Brian's extrapunitive score began the study substantially below the normative level, and exhibited a moderate decline during the baseline period. It rose back to the baseline level by assessment period 4, and after a fairly stable four months, showed a marked-moderate spurt between periods 6 and 8, reaching slightly above the normative level at period 7. This score ended the study only minimally above the level it was at during the first assessment period.

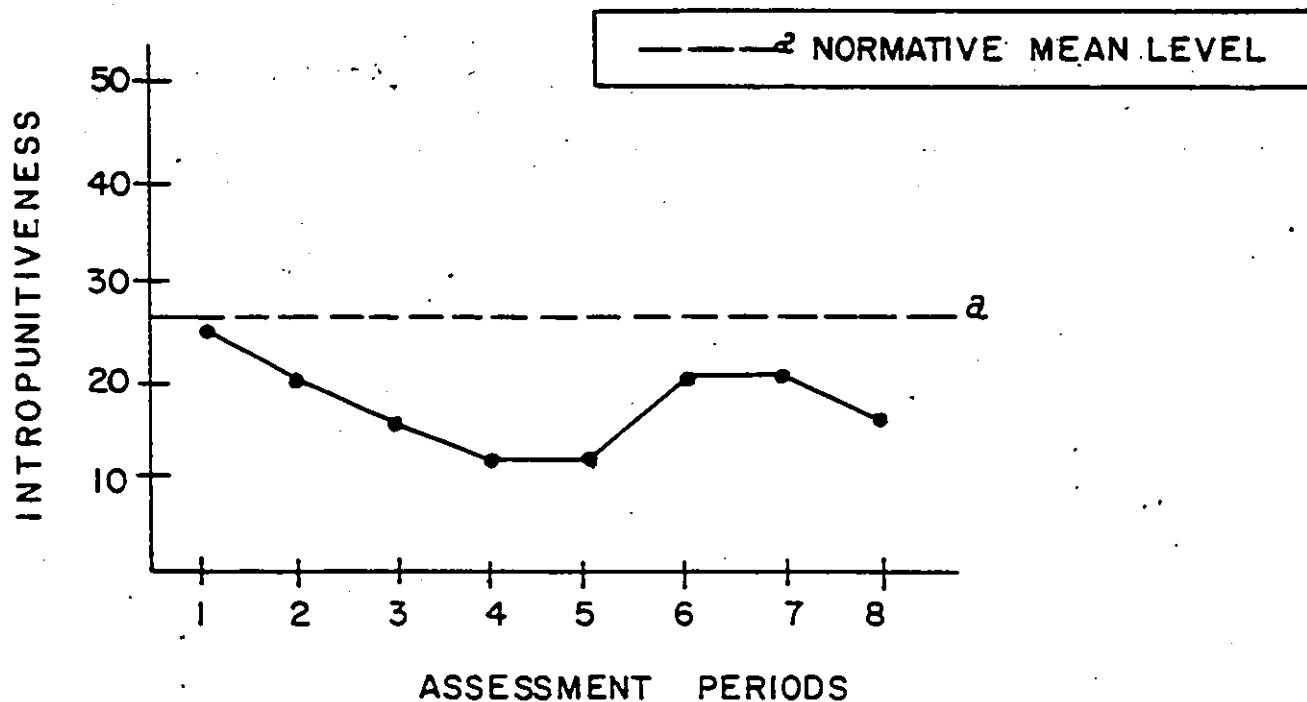
Brian's intropunitive score showed a moderate decline, from just below normative levels, over the first four assessment periods (see figure 39). After remaining stable for two months, it



KEY

BASELINE PERIOD
 1 DECEMBER 1975
 2 FEBRUARY 1976
 APP REMEDIAL PERIOD
 3 APRIL 1976
 4 JUNE 1976
 5 AUGUST 1976
 6 OCTOBER 1976
 7 DECEMBER 1976
 FOLLOW-UP PERIOD
 8 FEBRUARY 1977

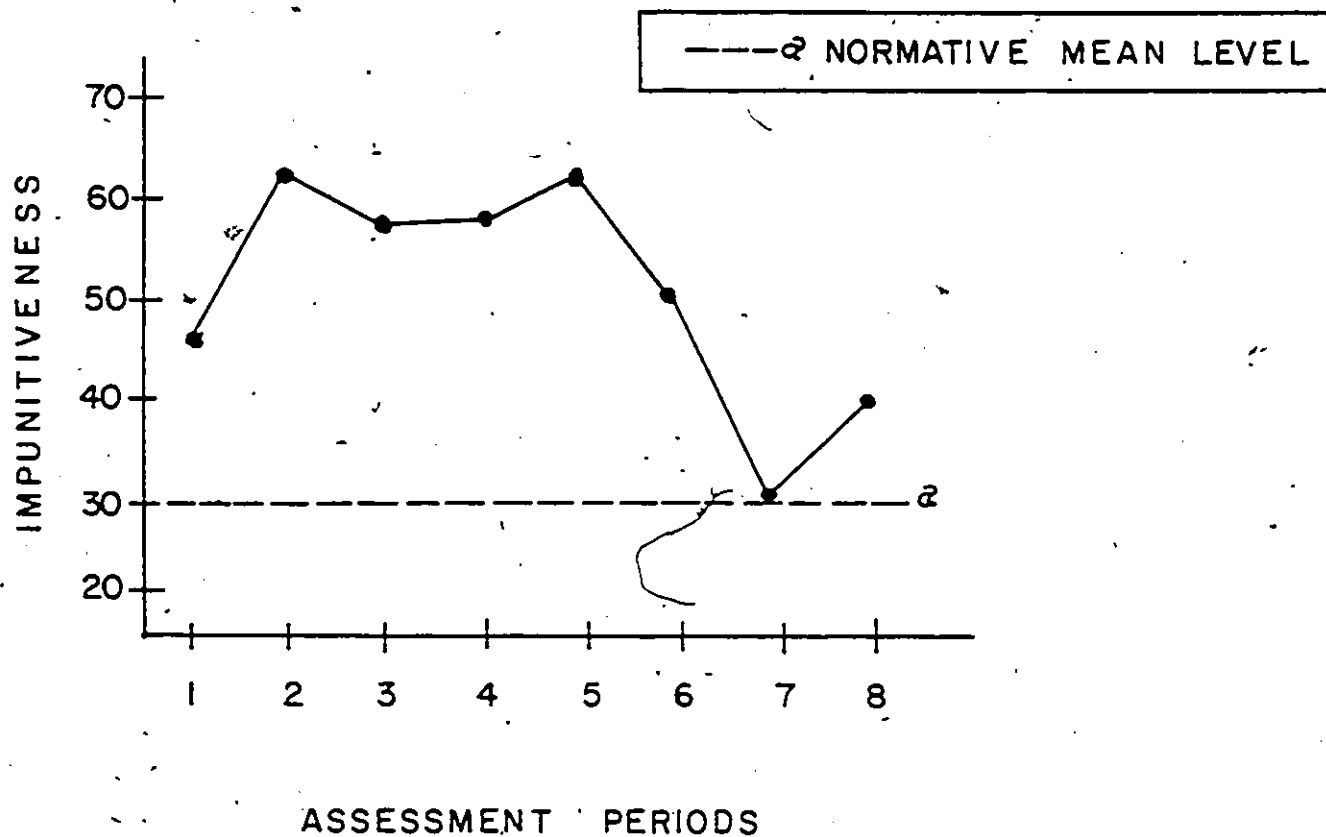
FIGURE 38 BRIAN'S EXTRAPUNITIVE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD
 1 DECEMBER 1975
 2 FEBRUARY 1976
 APP REMEDIAL PERIOD
 3 APRIL 1976
 4 JUNE 1976
 5 AUGUST 1976
 6 OCTOBER 1976
 7 DECEMBER 1976
 FOLLOW-UP PERIOD
 8 FEBRUARY 1977

FIGURE 39 BRIAN'S INTROPUNITIVE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 40 BRIAN'S IMPUNITIVE ROSENZWEIG SCORES.

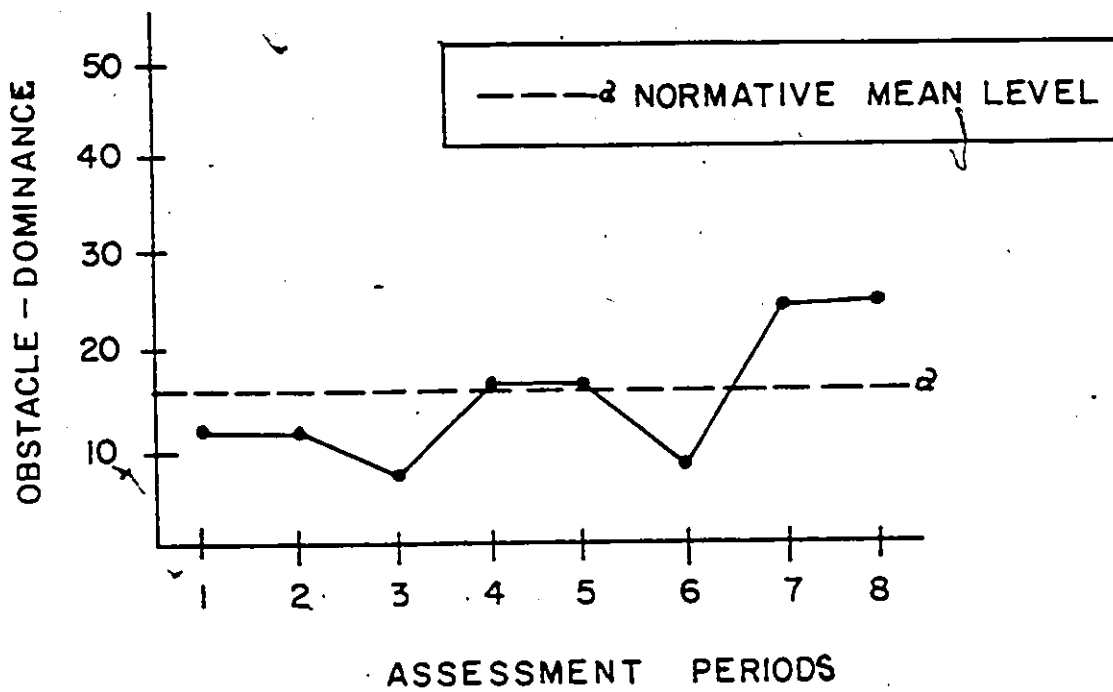
exhibited a small increase by period 6, and remained fairly stable over the remainder of the study, a small degree below the normative level.

Brian's impulsive score began the study substantially above the normative level, and rose moderately over the baseline period (see figure 40). It exhibited only minimal to small changes between assessment periods 2 and 5, but exhibited a marked decrease by period 7, reaching the normative mean level. Over the followup period, a small increase occurred.

As can be seen by figure 41, Brian's obstacle-dominance score remained stable just below the mean level, during the baseline period. A small dip occurred in this score, between assessment periods 2 and 4, with Q-D reaching to the mean level at the end of it. After remaining stable at this point for two months, a small to moderate dip occurred between periods 5 and 7, leaving his score a small degree above the normative level. His score remained stable at this level over the followup period.

During the first assessment period, Brian's ego-dominance score was a small degree above the normative level (see figure 42). After rising a small degree during the baseline period, this score remained stable for a two month period. It then showed a small dip between periods 3 and 5, which was followed by a marked decline between assessment periods 5 and 7, leaving Brian's E-D score well below the normative level. This score rebounded by a small degree over the followup period.

As can be seen by Figure 43, Brian's need-persistence score fell by a small degree during the baseline period. After remaining



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

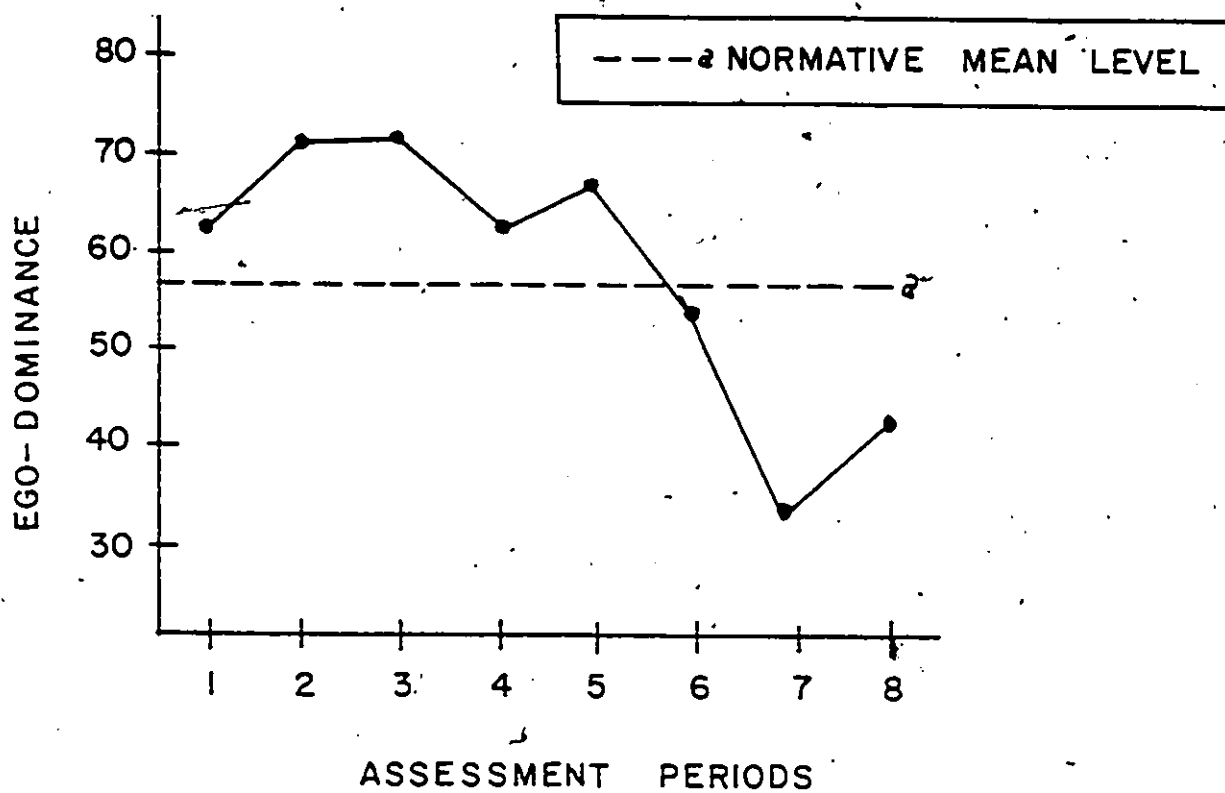
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 41 BRIAN'S OBSTACLE DOMINANCE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

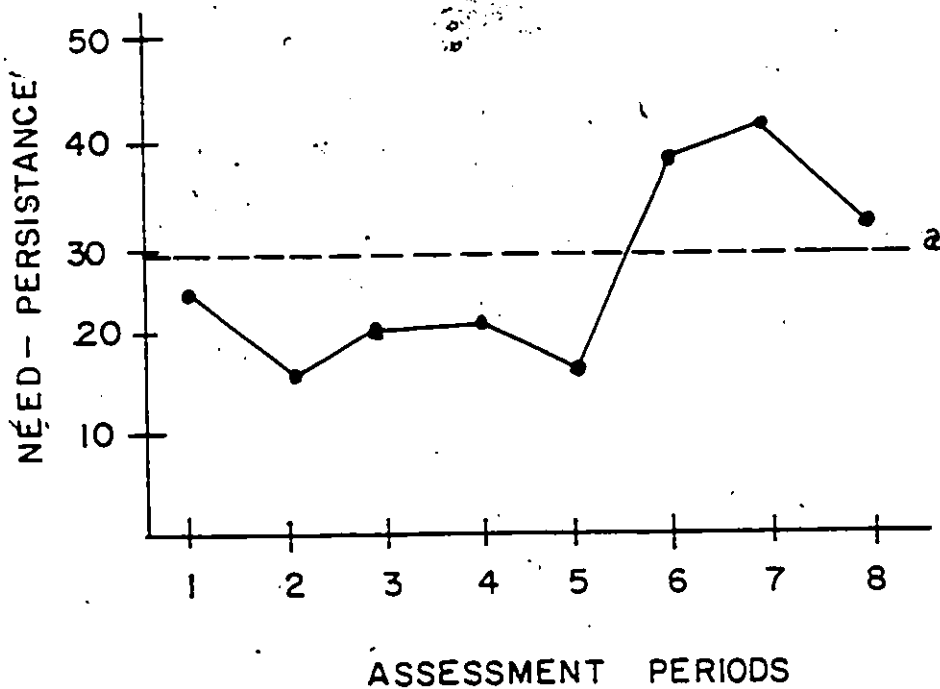
7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 42 BRIAN'S EGO DOMINANCE ROSENZWEIG SCORES.

— — — a NORMATIVE MEAN LEVEL



KEY

BASELINE PERIOD

- 1 DECEMBER 1975
- 2 FEBRUARY 1976

APP REMEDIAL PERIOD

- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976

FOLLOW-UP PERIOD

- 8 FEBRUARY 1977

FIGURE 4.3 BRIAN'S NEED PERSISTANCE ROSENZWEIG SCORES.

Table 14
Brian's Rosenzweig Responses

Scale	Assessment Periods								Read	Norm
	1	2	3	4	5	6	7	8		
Total Percentage Scores										
Direction of Aggression										
E*	29	16	25	29	25	29	50	33	54.9	46.0
I*	25	20	16	13	13	20	20	16	20.0	15.6
M*	46	63	58	58	63	50	29	38	26.2	28.5
Focus of Aggression										
OD*	13	13	8	17	17	8	25	25	15.4	16.3
ED*	63	71	71	63	67	54	33	42	60.8	56.4
NP*	25	17	21	21	17	38	42	33	24.7	27.2
Broken Down Response Patterns										
Direction of Aggression										
E										
A-C*	3	1	3	4	3	2	7	6	6.3	5.9
C-C*	4	3	3	3	3	5	5	3	7.3	6.9
I										
A-C	4	4	3	2	2	4	4	3	3.8	4.3
C-C	2	1	1	1	1	1	1	1	1.8	1.7
M										
A-C	8	10	9	9	10	9	4	6	4.0	3.7
C-C	3	5	5	5	5	3	3	3	2.7	3.3
Focus of Aggression										
OD										
A-C	3	2	2	1	2	2	4	5	2.3	2.2
C-C	0	1	0	3	2	0	2	1	1.9	1.8
ED										
A-C	7	10	9	11	10	7	4	5	7.4	6.2
C-C	8	7	8	4	6	6	4	5	7.7	7.0
NP										
A-C	5	3	4	3	3	6	7	5	4.4	5.8
C-C	1	1	1	2	1	3	3	3	2.3	3.1

Reading disability norms taken from Spache, 1957.

Normative scores taken from Spache, 1957.

E* - Extrapunitiveness

I* - Intropunitiveness

M* - Impunitiveness

OD* - Obstacle-Dominance

ED* - Ego-Dominance

NP* - Need-Persistence

A-C* - Adult-Child

C-C* - Child-Child

Assessment Periods

Baseline Period

1-December 1975

2-February 1976

APP Remedial Period

3-April 1976

4-June 1976

5-August 1976

6-October 1976

7-December 1976

Follow-up Period

8-February 1977

relatively stable until assessment period 5, showing only minimal variation, this score took a marked jump by assessment period 6, leaving it moderately above the normative level. Brian's N-P score remained fairly stable at this level, until the followup period, when it exhibited a moderate decline, leaving it just above the normative level.

The third specific research expectation postulates a change in the way Brian conceptually handles frustrating situations concurrent with the remedial process.

During the baseline period, Brian's Rosenzweig scores exhibited the following pattern: E was well below the normative level and minimally falling; I was slightly below the normative level and minimally falling; and M was moderately above the normative level and rising. Conceptually then, this could be viewed behaviorally as showing Brian to be quite passive (M) in his approach to frustrating situations, preferring to gloss over such events in his life rather than face them directly. He rarely showed anger directed at others but would occasionally place the blame on himself for the conflict. Also during this time, his O-D score was slightly below normative levels and rising; his N-P score was also slightly below normative levels, but falling; and his E-D score was a small degree above normative levels and rising. Behaviorally these scores fit the pattern expressed in his direction of aggression scores and showed Brian to be quite defensive (ED) about his role in conflict.

Brian's Rosenzweig results showed a fair amount of change concurrent with the remedial process. His direction of aggression

scores exhibited a large drop in impunitiveness (M) and a concurrent rise in extrapunitiveness (E). Also, during the remedial period, Brian's obstacle dominance and need persistence scores both rose, while ego dominance fell.

Behaviorally, the change in Brian's direction of aggression scores indicates that he began taking less of a passive stance in frustrating situations, preferring to begin directing his anger outward toward the environment. This overall trend though, began reversing itself over the followup period.

Brian's focus of aggression scores indicate that rather than taking more of a defensive stance, as he predominantly did over the baseline period, he began concentrating more on the source of the frustration as well as searching for possible solutions.

In summary, Brian's Rosenzweig responses suggest a change in the way he conceptually handled frustrating experience, thus supporting the third research expectation.

The child's personality traits and dynamic organization

Five of Brian's primary CPQ scales and one second order factor showed change concurrent with the intervention period: Factor D rose from a low baseline level to within the average sten range; factor G fell to below average sten level; factor H also fell, but to within the average range; factor N rose to an average score; and factor Q3 fell from a high average range to a sten of 2. The second order factor which exhibited change was anxiety, which rose during the remedial period but began decaying over the followup.

Behaviorally, the marked rise in factor D (see table 15), of three sten scores to an average sten level, is indicative of more

Table 15

Brian's CPQ Results for the Baseline,
APP Remedial and Follow-up Periods

Trait	Assessment Periods				
	Baseline		APP Remediation		Follow-up
	12/75	2/76	7/76	12/76	2/77
Primary Source Traits					
A	4	5	5	4	3
C	5	5	7	5	7
D	2	2	5	6	4
E	6	5	7	3	5
F	6	5	7	5	4
G	5	5	3	3	3
H	7	7	6	5	7
I	4	4	3	6	6
J	6	6	6	5	5
N	4	4	6	6	5
O	6	5	4	5	4
Q3	7	6	2	2	5
Q4	6	6	8	6	6
Second Order Factors					
Extraversion	5.6	5.5	5.9	4.7	4.9
Anxiety	5.1	5.0	6.1	6.2	5.1
Tough Poise	6.4	6.2	7.0	6.0	6.5
Independence	5.9	5.3	5.5	4.0	4.9

All trait scores are listed in sten scores.

Average sten scores for all primary source traits are 5 and 6.

Mean score of second order factors are 5.5, S.D-2.0.

physical energy. During the baseline period, this low score was suggestive of an inactive, phlegmatic temperament. The rise in factor N to within average sten levels, is indicative of Brian maturing somewhat in his social intercourse, becoming less naive and more astute in his interchanges. The slight fall in factor H, over the remedial period can be viewed as a small moderation in Brian's social reactivity, which also appears in line with the change in factor N.

The drop in factors G and Q3 are somewhat more concerning. Factor G is the level of superego strength, while Q3 represents the amount of self sentiment integration. Considering the overall drop in Brian's SEI ratings, it might follow that his self-regarding sentiment (Q3) would also fall. With the change in Brian's perceptions about his worth and standing within his milieu, the fall in self integration can be seen as part of an accommodation process. This hypothesis is strengthened somewhat by the rise in this score over the followup period.

The authors define factor G as the strength of superego factors in restraint of instinctual drive. They do caution, that this factor, when measured by questionnaire, is one of the most motivationally distorted ones, and therefore, occasional anomalous results could be expected. In Brian's case there were some overt signs (i.e. social adjustment ratings), that during the remedial period, he was experiencing some difficulty maintaining relationships. The fall in this factor would point to Brian becoming more self indulgent, and disregarding of rules.

On the Developmental Rorschach Rating Scale, it is evident from figures 44-46, that all three of Brian's overall index's remained stable over the baseline period, all above the mean level for his age. After remaining stable over the baseline period, Brian's cognitive index showed only a small upward trend over the intervention period (see figure 44). It then fell back to the mean level over the followup period.

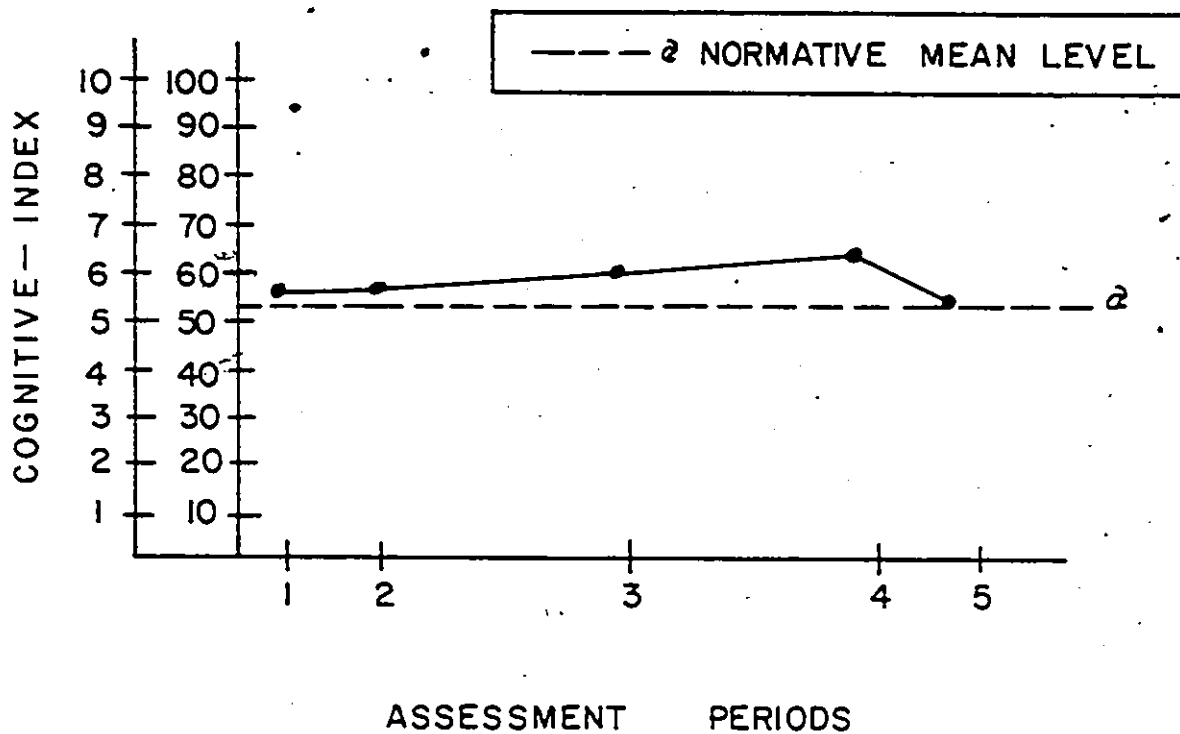
Brian's affective index fell markedly over the first five months of intervention, to just below the mean level (see figure 45). It rebounded strongly the second five months of intervention, but fell off moderately over the followup period.

As can be seen by figure 25, Brian's personalization index varied only by a small degree over the remedial period, falling after five months, but rebounding the last five months (see figure 46). This score fell by a small degree over the followup period.

The fourth specific research expectation postulates a change in Brian's underlying personality organization. This should be evidenced in cognitive and affective integration, as well as in the structuring of his experience.

As mentioned, Brian's Rorschach protocols were relatively stable over both baseline assessment periods. His quantitative determinant scores also remained quite stable (see table 16), the only changes being a fall in Fc and CF by 1 response, and a rise in FC by 1 response.

During the intervention period, Brian's cognitive index rose by .60. This rise appears across all of the four subscales that make up the index, as they all exhibited higher levels at this time than



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

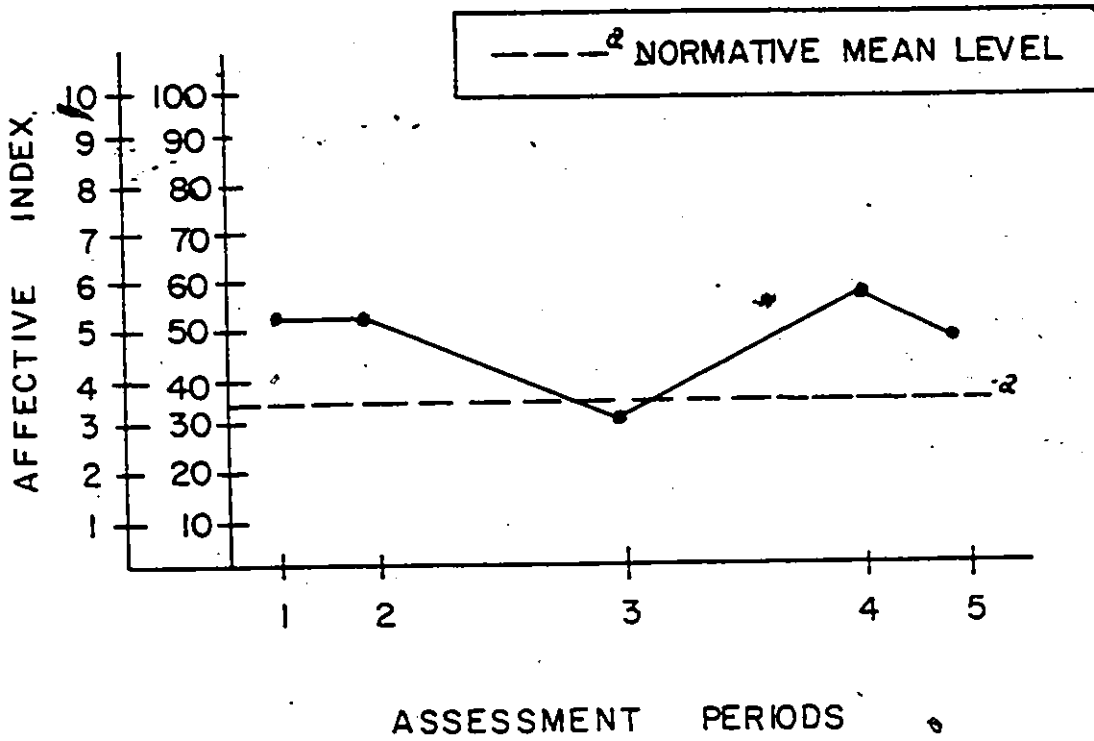
3 JULY 1976

4 DECEMBER 1976

FOLLOW-UP PERIOD

5 FEBRUARY 1977

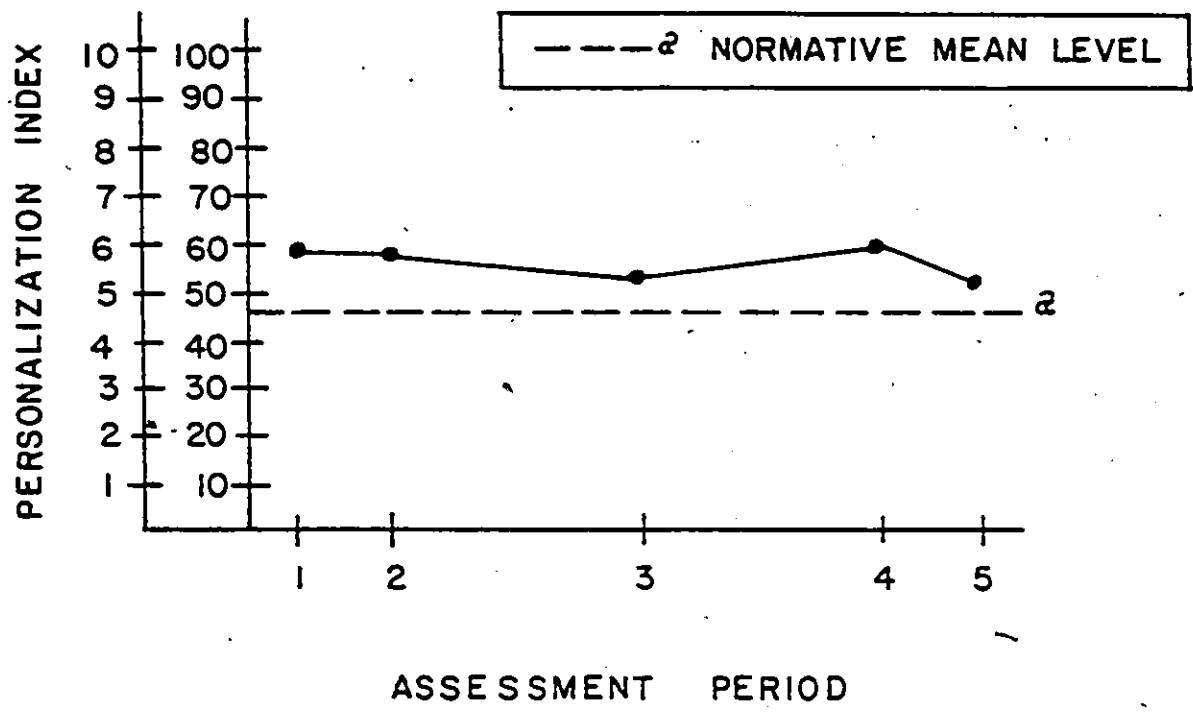
FIGURE 44 BRIAN'S R.R.S. COGNITIVE INDEX.



KEY

- BASELINE PERIOD
 - 1 DECEMBER 1975
 - 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
 - 3 JULY 1976
 - 4 DECEMBER 1976
- FOLLOW-UP PERIOD
 - 5 FEBRUARY 1977

FIGURE 45 BRIAN'S R R S AFFECTIVE INDEX.



KEY

- BASELINE PERIOD
 - 1 DECEMBER 1975
 - 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
 - 3 JULY 1976
 - 4 DECEMBER 1976
- FOLLOW-UP PERIOD
 - 5 FEBRUARY 1977

FIGURE 46 BRIAN'S R R S PERSONALIZATION INDEX.

before intervention. Two of these scales exhibited an upward reversal of baseline trends over the remedial period (Numbers 1 and 4).

Although the quality (structural differentiation) of Brian's whole responses improved over the intervention period, the percentage of these responses decreased over this period (see table). The W response is usually indicative of the child's ability to organize and plan both thoughts and action (Piotrowski, 1974). In this respect, Brian appeared more selective in his ability to abstract, but for the most part he remained a practical and concrete thinker.

Scale 4, form controlled determinants, also showed a positive reversal of baseline trend. In children, as in adults, the higher the quality of form controlled determinants, the more objective is the child's grasp of the reality in which he lives (Schachtel, 1958). Both these scores are indicative of positive cognitive growth and integration over the remedial period. His cognitive index fell over the followup period, bringing into question the permanence of the change.

Brian's affective index was much more variable over the remediation period than his cognitive index was. It fell off across all three subscales by the midpoint of intervention (see table 17), then rose back by the end of APP. It then fell off again during the followup period. One of the major changes by mid-intervention, was the fall in the number of FC responses and the concurrent rise in CF responses. This change caused a rise in sum C and a change in the favor of CF and C, in his FC:CF & C ration (see table 16). Both

Table 16

Brian's Rorschach Responses

	Baseline Period		Assessment Periods		
	12/75	2/76	Remedial Period		Followup
	12/75	2/76	7/76	12/76	2/77
Total R	15	16	21	34	39
Location Scores					
W%	40	31	24	21	18
D%	53	67	71	68	64
d%	0	0	0	3	8
Dd%	7	6	5	9	10
Determinant Scores					
F%	53	50	52	59	56
M	3	3	4	5	5
FM	0	0	0	5	3
m	0	0	0	0	2Fm
FK	0	0	0	0	0
Fc	2	1	1Fc, 1Fc	1Fc, 1cF	1Fc
FC1	1	1	0	1	1
FC	2	3	1	1	2
CF	1	0	3	1	2
C	0	0	0	0	1
Quantitative Scores					
M:FM	3:0	3:0	4:0	1:1	5:3
Sum C	2	1.5	3.5	1.5	4.5
FC:CF+C	2:1	3:0	4:3	1:1	2:3
M:Sum C	3:2	3:1.5	4:3.5	5:1.5	5:4.5

Table 17

Brian's Developmental Rorschach Rating Scale Scores

Scale	Scoring Periods				
	Baseline Period		Remedial Period		Follow-up Period
	12/75	2/76	7/76	12/76	2/77
*C.I.	5.80	5.80	6.00	6.40	5.60
*A.I.	5.30	5.30	3.30	5.80	4.80
*P.I.	5.90	5.90	5.30	6.00	5.30
A					
(1)	3.33	3.20	3.40	3.42	3.00
(2)	2.55	2.63	2.56	3.00	2.70
(3)	2.50	2.87	2.81	3.00	2.78
(4)	3.14	2.87	3.16	3.33	2.71
B					
(5)	2.33	2.33	2.00	3.00	1.80
(6)	3.00	3.00	0.00	3.00	3.00
(7)	3.00	3.00	2.66	2.50	3.00
C					
(8)	3.00	3.00	2.75	3.00	2.80
(9)	2.85	2.87	2.50	3.00	2.46

A 0 indicates no scorable responses given

A - Cognitive Integration

- (1) Whole Responses
- (2) Part Responses
- (3) Form Level
- (4) Form-Controlled Determinants

B - Affective Integration

- (5) Form-Color Integration
- (6) Form-Shading Integration
- (7) Texture Integration

C - Personalization

*C.I.-Cognitive Index

A.I.-Affective Index

P.I.-Personalization Index

- (8) Quality and Balance of Movement
- (9) Quality and Balance of Movement, Shading and Color

these quantitative proportional changes relate to Brian's emotional responsiveness to the environment. The rise in sum C indicates a higher degree of overt reactivity on his part. The favoring of CF & C during this period points to a weakened control by Brian over his emotional impulses. By the end of the intervention, sum C had fallen and the FC:CF & C ratio was 1:1. During the followup period, sum C rose back strongly and Brian's FC:CF & C relationship rose back to 2:3. These scores in general would support previous stated CPQ results of weakened superego controls. Brian became more reactive (also seen in Rosenzweig), and appeared in less control over these reactions. It should be emphasized that this trend was variable at best, for during the final scoring period before the followup, his affective index rose to its highest level over the entire study. The fall off in this score during the followup was less severe than during the first five months of intervention.

Brian's personalization index was also variable. After the baseline period, it fell the first five months of APP, rose to its highest level by the end of the intervention period, then fell back over the followup period. The variance in this index was concurrent with that seen in his affective index. It appears apparent that the first five months of intervention was a restructuring period for Brian, both in his affective integration as well as in his humanization development.

In summary, the fourth specific research expectation can only be partially supported, as Brian's cognitive index was the only score that exhibited a stable trend concurrent with the remedial process. Strong signs existed in Brian's protocol to suggest that

both his affective and personalization index's were both undergoing a re-ordering process and improving both in structural differentiation and hierarchial integration.

Summary of Psycho-Social Results

One of the most positive psycho-social/personality changes that occurred concurrent with the remedial process, in Brian's testing results, was what could be termed his objective perceptions of reality. Both in the Rorschach and the SEI, signs began pointing to an objectification of Brian's perceptual process. In this way, he was beginning to take important steps in his individuation process. In organismic terminology, his ability to assess and judge his assets, and their relative importance, became more articulated in parallel to the remedial process.

Another positive change in Brian could be termed his reactivity to his environment. After the remedial process, he was seen as less afraid to engage in social intercourse and he appeared to have more energy available for that process. Rosenzweig results suggest a less passive approach to conflictual and frustrating situations, with a parallel improvement in Brian's problem solving ability.

Testing also revealed, that concurrent with the first five months of the remedial process, there were many signs of the difficulty Brian was experiencing in this process. The lability seen in both the affective and personalization index's of the Rorschach and the self integration, anxiety and superego scores of the CPQ, suggest a dramatic restructuring of his underlying personality organization. Some strong signs, especially on the

Rorschach, imply that this was leading to a more discrete, more differentiated hierarchial organization.

Although there were some signs that remediation had elicited some positive psycho-social/personality changes in Brian's functioning, there were also signs that pointed to a lack of permanence in these changes. Across many of the instruments, there was decay over the followup period or indications of persistent lability.

Child #4-Charles

APP Remedial Programming

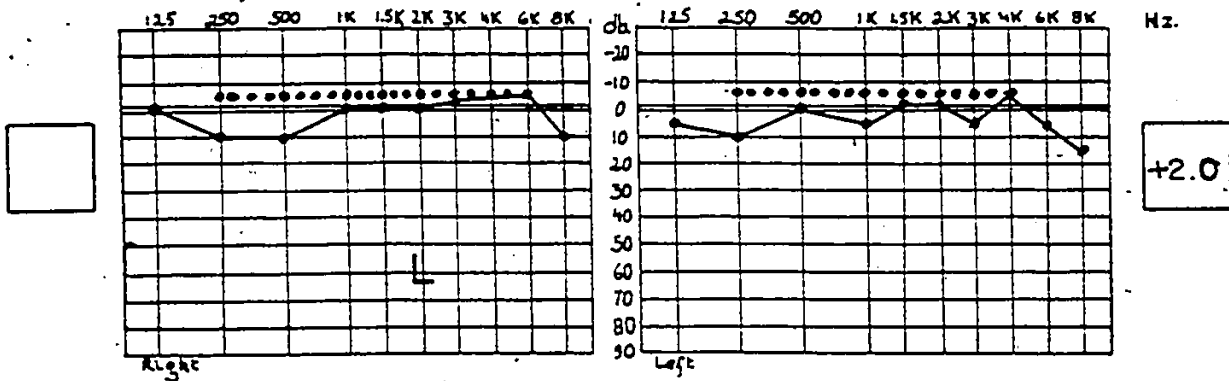
The first stage of Charles' APP programming was very short because of the positive nature of his listening test. It consisted of 30 session of listening to filtered mother's voice and five sessions of sonic birth. By the middle of March it was felt Charles was ready for the performance stage of programming.

The performance stage went very smoothly for Charles and lasted for 70 sessions until the end of May. During this time his listening test also showed positive trend by taking on a more ascending curve with the bone conduction curve beginning to drop below the air (see figure D).

Charles' training sessions began at the beginning of June and lasted over the remainder of the intervention phase. Most of his sessions consisted of reading into the electronic ear. One important trend was noticed on Charles' listening test during this period—his bone conduction began rising above the air. Tomatis (1978) views this as a rise in underlying tension.

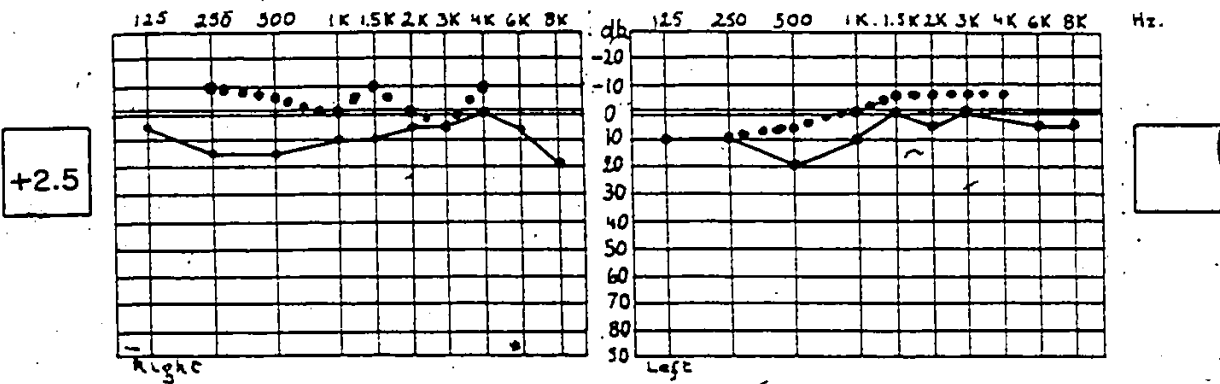
Date: BASELINE TESTING

230

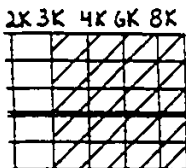


Examiner: _____

Date: FOLLOW-UP TESTING



Examiner: _____



DIAGONAL LINES ARE INDICATIVE OF THOSE FREQUENCIES WHERE AUDITORY SELECTIVITY WAS CLOSED, AS MEASURED BY AUDITORY DISCRIMINATION (TOMATIS 1978.)



THE NUMBER WITHIN SIDE THE BOX INDICATES THE STRENGTH OF AUDIOLATEROMETRY (TOMATIS LATERALIZATION TEST.)

R-L-M A LETTER WITHIN GRAPH INDICATES SPECIALIZATION ERROR

----- BONE CONDUCTION CURVE

———— AIR CONDUCTION CURVE

FIGURE D: TOMATIS LISTENING TEST CHILD #4 CHARLE'S.

Criterion Results

During the baseline period, Charles' Myklebust learning quotient was 35 points, below the cutoff score for learning disability, (see table 13). After intervention, it had risen to 90, which is above the required threshold. His Myklebust Pupil Behavior Rating Scale rose over the remedial period from 68 to 73, which also places him above the cutoff criteria. By both these criteria, after intervention, Charles would not have been included in the initial selection of subjects.

By the criteria outlined by Tomatis (listening test and audiometerometry), the APP training was only partially successful. On the positive side, auditory selectivity remained open, both air curves exhibited more ascendance especially in the lower frequencies, and audiometerometry switched from a left ear advantage of 2 to a right ear advantage of 2.5. On the negative side, bone conduction, especially in the lower frequencies, remained high. This level had dropped over the first five months of intervention, but then rose back over the final three months. One spacialization error also remained.

Lastly, in reviewing Charles' composite academic index, a two month increase was seen over the baseline period. After intervention, his score had risen 1 year, 1 month, indicating a slight change in level of trend.

Considering all these factors, Charles' remedial program could be called moderately successful.

Before proceeding to the specific research expectations, an important variable needs comment. About six months into the

Table #18

Charles' Academic Testing Scores for
Baseline, APP and Followup Periods

Test	Scoring Periods							
	Baseline Period		APP Remedial Period		Followup Period			
	12/75	2/76	4/76	6/76	8/76	10/76	12/76	
W.I.S.C.-R.								
Verbal I.Q.	112							167
Performance I.Q.	114							121
Full Scale I.Q.	114							115
W.R.A.T.								
Reading	1.7	2.0	2.3	3.1	3.2	3.6	3.8	4.1 ^a
Spelling	1.4	1.8	2.2	2.0	2.0 ^a	2.3	2.5	2.5
Arithmetic	1.9	2.1	2.4	2.6	2.8	3.0	3.2	3.6
Gates-McGinitie								
Vocabulary	2.0	2.0	2.3	2.3	2.0	3.3	2.7	2.7
Comprehension	1.5	1.6	1.7	1.9	2.5	2.7	2.6	3.1
Composite Academic Index	1.7	1.9	2.2	2.4	2.5	3.0	3.0	3.2
P.B.R.S.								
Verbal	31	31					34	
Non-Verbal	36	37					39	
Total	67	68					73 ^b	✓
Learning Quotient	85						90 ^c	

^aAll scores are in grade equivalents by year and month.

^bHighest score is 120 with 70 being the cutoff for L.D.

^cCutoff score for learning disability is .89.

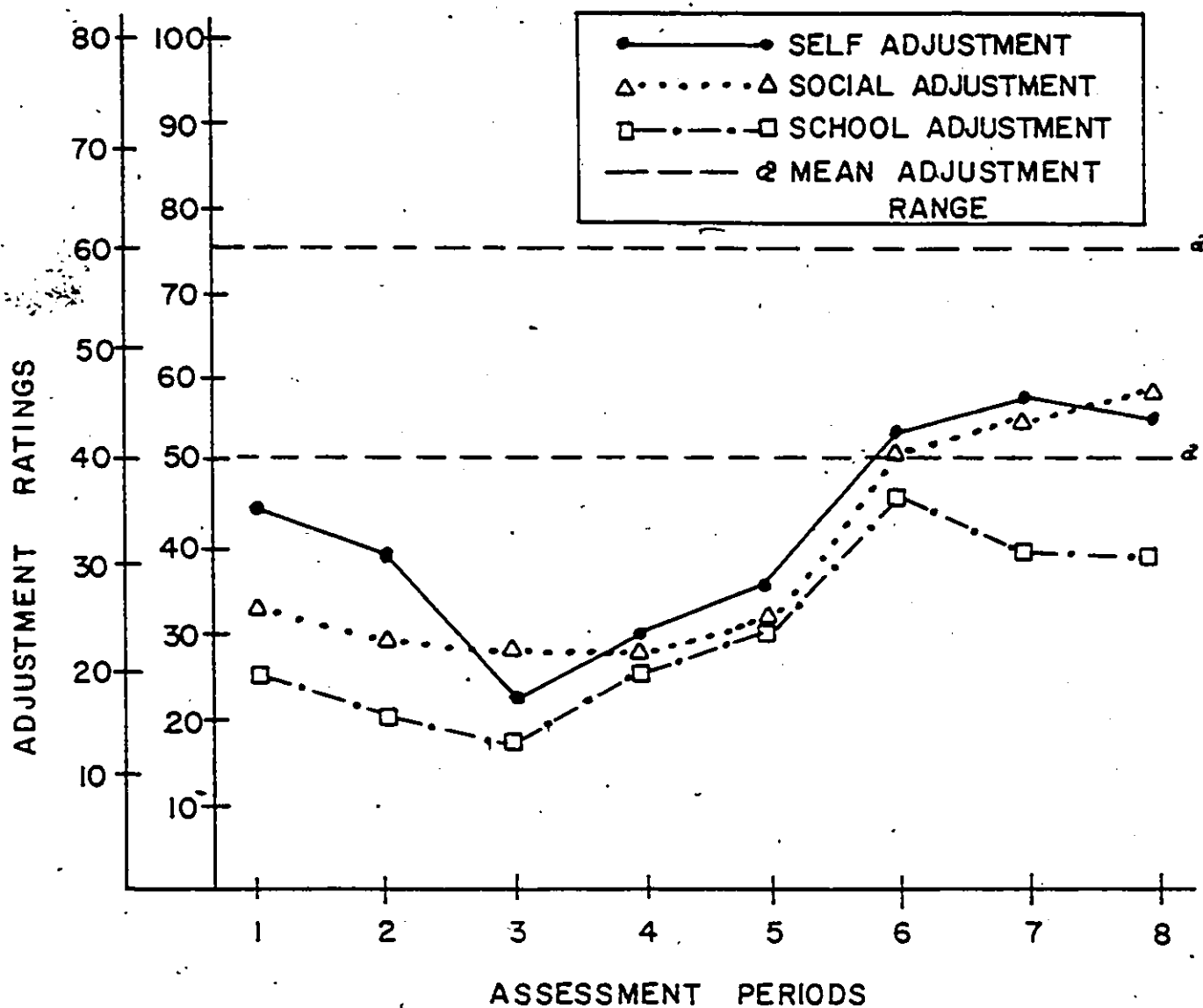
remediation, Charles' parents became increasingly dissatisfied with the program at the Child Study Centre. Whether this had any causal effect with this study is not known. Mother, at numerous times, threatened to remove Charles, both from the study and the Centre but never did. Mother's comments to the staff in front of her son could be seen as undermining both his school program and his APP training. Visible signs of tension in Charles' were noticed over the final three months of training, accompanied with periods of absenteeism.

How significant other's view the child

As can be seen by figure 47, all three of Charles' adjustment ratings by his teacher exhibited the same general slope until assessment period 6. All three scales began the baseline period below the average adjustment range and showed minimal to moderate decline for the first three assessment periods. Between periods 3 and 6, all three scales rose to around the average range with school adjustment slightly below this level.

Between assessment periods 6 and 7, both Charles' self and social adjustment scales showed small gains and then subsequently remained stable over the followup period. His school adjustment rating exhibited a moderate decline between periods 6 and 7, and then remained stable over the followup period.

Both adjustment ratings by Charles' parents were within the average range for the entire study (see figure 48). His self adjustment exhibited a moderate rise during the baseline period and remained fairly stable at this level until assessment period 5. Between periods 5 and 8, it showed a moderate rise, finishing off the study at the upper end of the average range.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

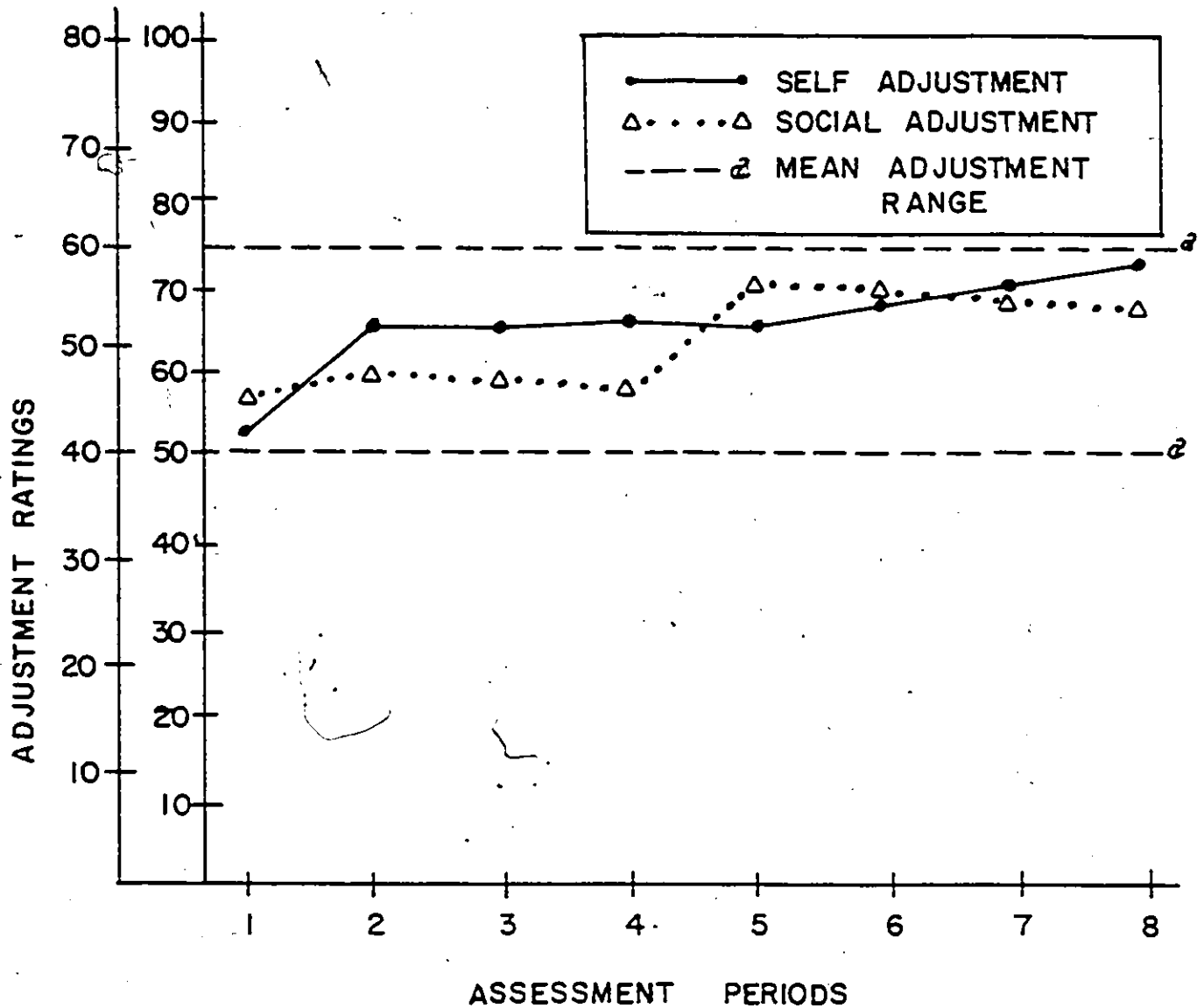
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 47 CHARLE'S ADJUSTMENT RATINGS ON THE CHILD BEHAVIOR RATING AS MEASURED BY HIS TEACHER.



KEY

- BASELINE PERIOD**
- 1 DECEMBER 1975
- 2 FEBRUARY 1976
- APP REMEDIAL PERIOD**
- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976
- FOLLOW-UP PERIOD**
- 8 FEBRUARY 1977

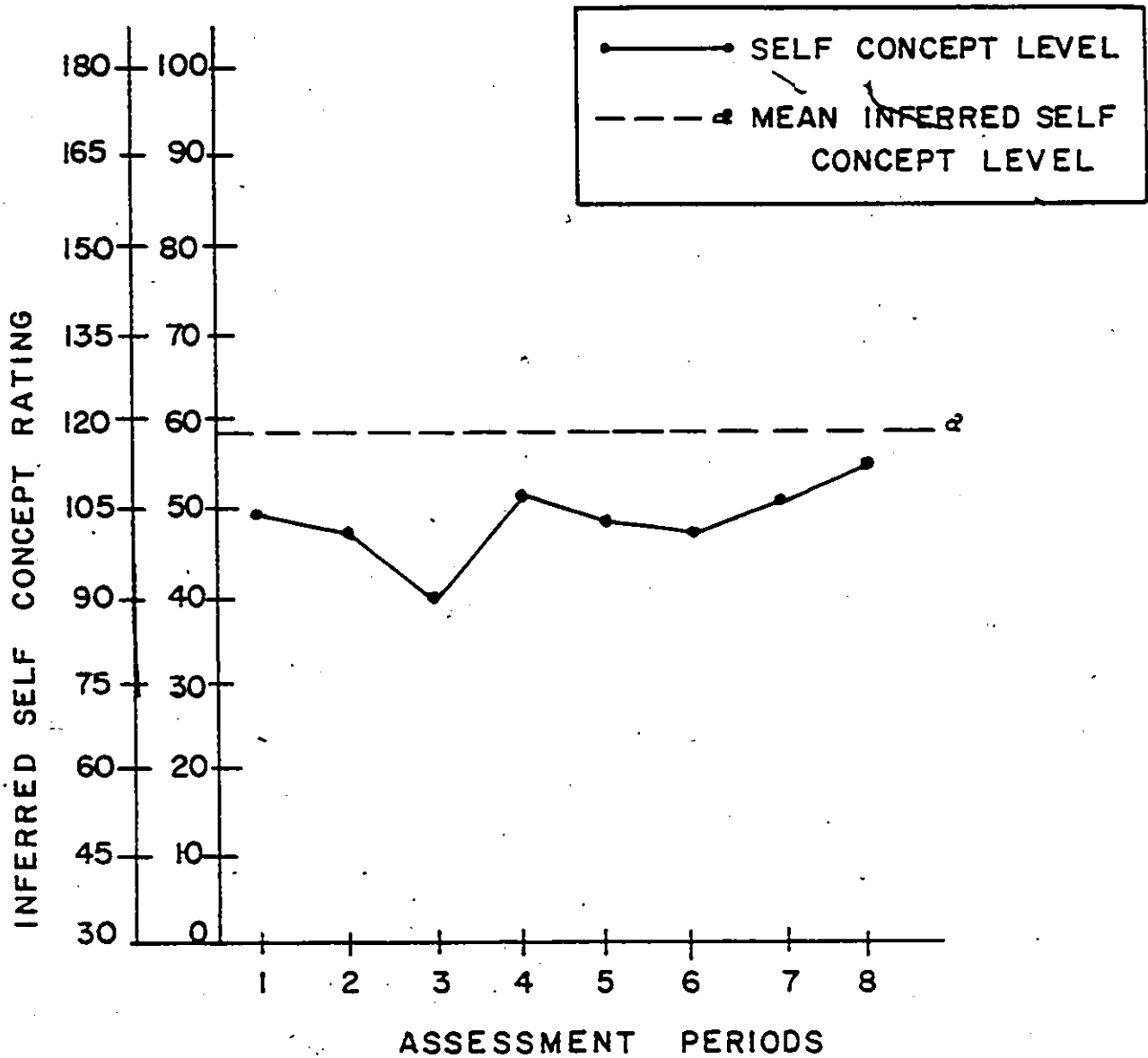
FIGURE 48 CHARLE'S ADJUSTMENT RATINGS ON THE CHILD BEHAVIOR RATINGS SCALE AS MEASURED BY HIS PARENT.

Charles' social adjustment, as seen by his parents, remained relatively stable for the first four assessment periods, at a low average range. It exhibited a moderate rise between periods 4 and 5, but then remained fairly stable, at this high average range, with only minimal decline over the remainder of the study.

Charles' self concept as rated by his teacher on the Inferred Self Concept Scale; was seen as moderately below the mean and showing a small decrease during the baseline period (see figure 49). This rating continued falling reaching its lowest point by assessment period 3. After showing a moderate gain by period 4, Charles' rating stabilized somewhat, falling by a small degree by assessment period 6, and rising by a slightly larger degree by the end of the study. At this point, it was barely below the mean level.

The first specific research expectation postulates that there will be a positive change in the way significant others view Charles' social and self adjustment over the intervention period.

Teacher rating of Charles' self adjustment fell by a small degree during the baseline period and was moderately below the average adjustment range before the remedial process began. As seen by his teacher, Charles' difficulties at this time centered around a number of areas. A major problem was his daydream activity during school. His mind appeared to wander quite easily off the subject at hand. Another area of concern was his general emotional attitude; his teacher saw him as generally unhappy, being hurt very easily by the comments of others, and showing a lack of confidence in his skill level. His physical appearance was also poor, as he was



KEY

- BASELINE PERIOD
 - 1 DECEMBER 1975
 - 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
 - 3 APRIL 1976
 - 4 JUNE 1976
 - 5 AUGUST 1976
 - 6 OCTOBER 1976
 - 7 DECEMBER 1976
- FOLLOW-UP PERIOD
 - 8 FEBRUARY 1977

FIGURE 49 CHARLE'S INFERRED SELF CONCEPT LEVEL AS MEASURED BY THE INFERRED SELF CONCEPT SCALE.

usually slovenly and unkempt. Teacher also felt his personal values were quite different from those of the other children.

Over the remedial period, his rated self adjustment rose to within the average range. Most of the changes in this rating centered around his improved appearance, as well as his self confidence. Although his distractability improved somewhat, it was still one of his lower ratings. Teacher ratings also suggest a moderation in Charles' activity level, feeling he could relax much easier when he wanted to.

Charles' social adjustment was rated lower than his self scale, also falling by a small degree over the baseline period. The major problem areas seen centered around two broad dimensions. First, Charles' appeared to lack status within his peer group, remaining almost on the perimeter of all interactions. He was a poor sport in cooperative games, and he tended to instigate the other children. The second area that resulted in his low ratings, was what might be called his egocentric attitude. He rarely listened to others when they spoke, and he tended to be selfish and self centered in his dealings with both peers and adults.

By the end of the the remedial period, Charles' social adjustment rating had risen to within the average adjustment range, reaching a T of 44. His improvement appeared to center around more age appropriate peer behavior, as he seemed to become more of a participating member with a higher peer status. Teachers also noticed that Charles was better able to carry on a pleasant conversation with both staff and peers. Although his listening

ability improved, this was still as one of his lowest ratings, as well as was his self centered, selfish attitude.

Teacher ratings of Charles' school adjustment were the lowest of his three adjustment ratings and was falling over the baseline period. A difficulty in this area, concerned what might be seen as an attention deficit (ie. difficulty keeping his mind on his work and thereby not completing his assignments). Charles also had major difficulty expressing himself, as well as exhibiting a fearful attitude toward participation. This overall picture left the quality of his school work varying from day to day.

Charles' school adjustment rating rose quite strongly concurrent with the remedial period, but by its termination and into the followup, it had not yet reached the average adjustment range. The major change in this area centered around Charles' feeling more comfortable within the school environment and not appearing as fearful of participation. Neither his attention nor his motivation toward his school work, showed any major improvement over the remedial process.

Charles' mother rated his self adjustment within the average range and rising during the baseline period (see figure 48). Her ratings rose by a small degree over the remedial period and this minimal rise continued into the followup period. In general, before the remedial period, mother did not notice Charles' general depressed attitude, as his teacher did. She did feel he was a very sensitive child whose feelings were easily hurt. She did concur with teacher ratings that Charles had difficulty paying attention

and that his thoughts tended to wander. Over the remedial period, the improvements she saw focused on his increased confidence level.

Mother's rating of Charles' social adjustment were also seen as being within the average range and rising during baseline (see figure 48). Her ratings showed a general ascendance during remediation then it fell minimally during the followup period. Mother's rating of Charles' social adjustment were all quite high during the baseline period. The only possible trouble area she saw was that he tended to show off in front of his friends. Although her overall rating rose during the remedial period, she saw one specific item falling dramatically, that being her son's popularity with boys his own age. She did not feel his show-off behavior improved.

Charles' rating of his self concept by his teacher declined during the baseline period (see figure 49). Although this downward trend was generally reversed during intervention, its rise was only a small degree by the followup period. Teacher rating during the baseline suggests a general lack of motivation and self confidence. Charles was seen as oversensitive in his interaction and fearful, especially of adults. Because of his lack of involvement in work, he would become easily discouraged and usually gave up without much effort. His teacher also saw him as getting into a lot of fights with peers, and in general, defiant of rules, especially those he had to adhere to within the classroom setting.

The positive changes in how significant others viewed Charles' appeared to center around two areas: first, Charles became more trusting and less fearful of his school environment, and second, he

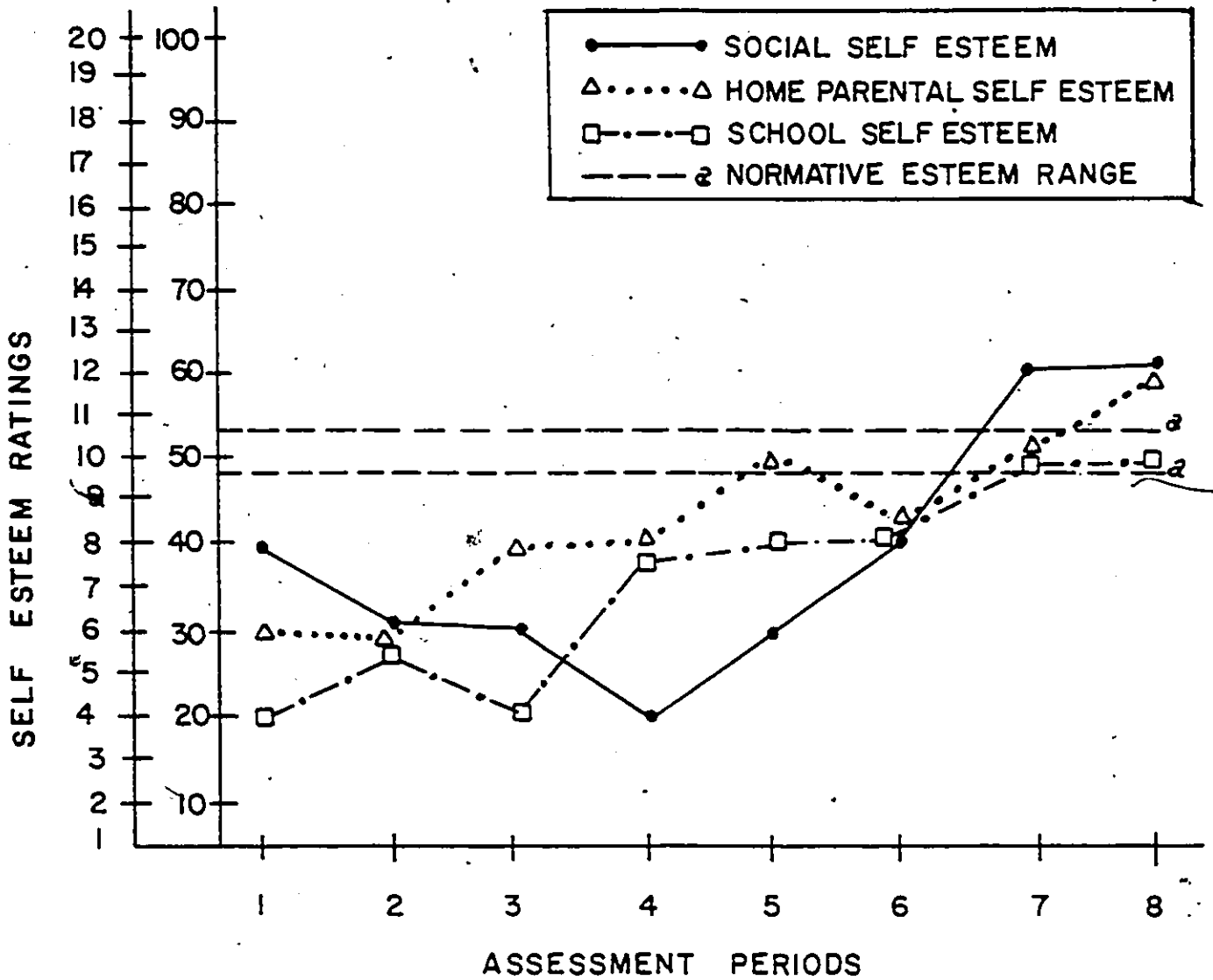
appeared to have more academic motivation, putting more effort into his work. There was not change concurrent with the remediation in Charles' periodic negative interactions with others. Ratings reflected that he was engaging in fewer physical confrontations with his peers, but interminently would provoke his classmates and reject friendly overtures.

In summary, teacher ratings of Charles' self and social adjustment and his self esteem reflected a positive change in his confidence level and, for the most part, his social interactions. It did indicate that there still remained an egocentric negativistic side to his behavior which remained following termination of the study. Parental ratings, both in self and social adjustment showed improvement, although it gave a qualitatively different picture of Charles than his teacher did. In general, then, the postulated change in this first specific research expectation could be supported.

How the child views himself

As can be seen by figure 50, Charles' social self esteem score fell moderately during the baseline period. This downward trend continued until assessment period four, when it reached its lowest level over the course of the study. This trend reversed itself over the remainder of the intervention period, as Charles' social self esteem exhibited a marked increase by assessment period seven, reaching above the average range. This esteem score then remained stable over the followup period.

Charles' home-parental esteem remained stable, quite a bit below the average range, during the baseline period. This score



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1976

FIGURE 50 CHARLE'S SPECIFIC SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.

then exhibited a generalized upward trend over the course of the study, reaching to within the average range, by the last assessment period during the remediation. This esteem score continued a moderate rise over the followup period.

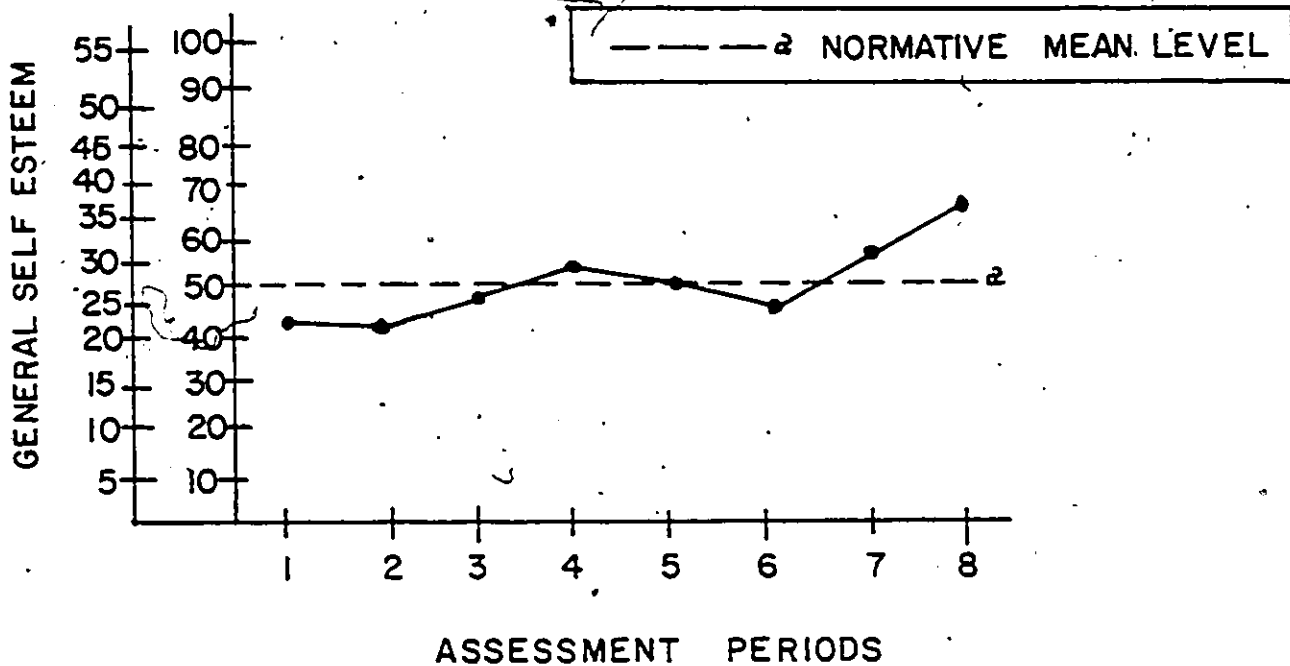
Charles' school self esteem score spurted over the first three assessment periods, but remained substantially below the mean level. By assessment period 7, this score had risen to within mean levels, and remained stable at that point, over the followup period.

In general summary then, out of Charles' three specific esteem scores: one score, social, exhibited an upward change in baseline trend and level concurrent with the remedial process; and one score, home-parental esteem, exhibited an upward change in level concurrent with APP.

Charles' general self esteem remained stable, slightly below the mean, during the baseline period (see figure 51). After showing a moderate gain, rising slightly above the mean by assessment period 4, it exhibited a small decline over the next four months. Over the last two assessment periods, Charles' general self esteem rose moderately, leaving it above the mean score at the end of the study.

Charles' total self esteem score remained stable, substantially below the mean level, during the baseline period (see figure 52). Except for a small to minimal decline between assessment periods 5 and 6, this score rose over the entire course of the study, ending after the followup period above the mean.

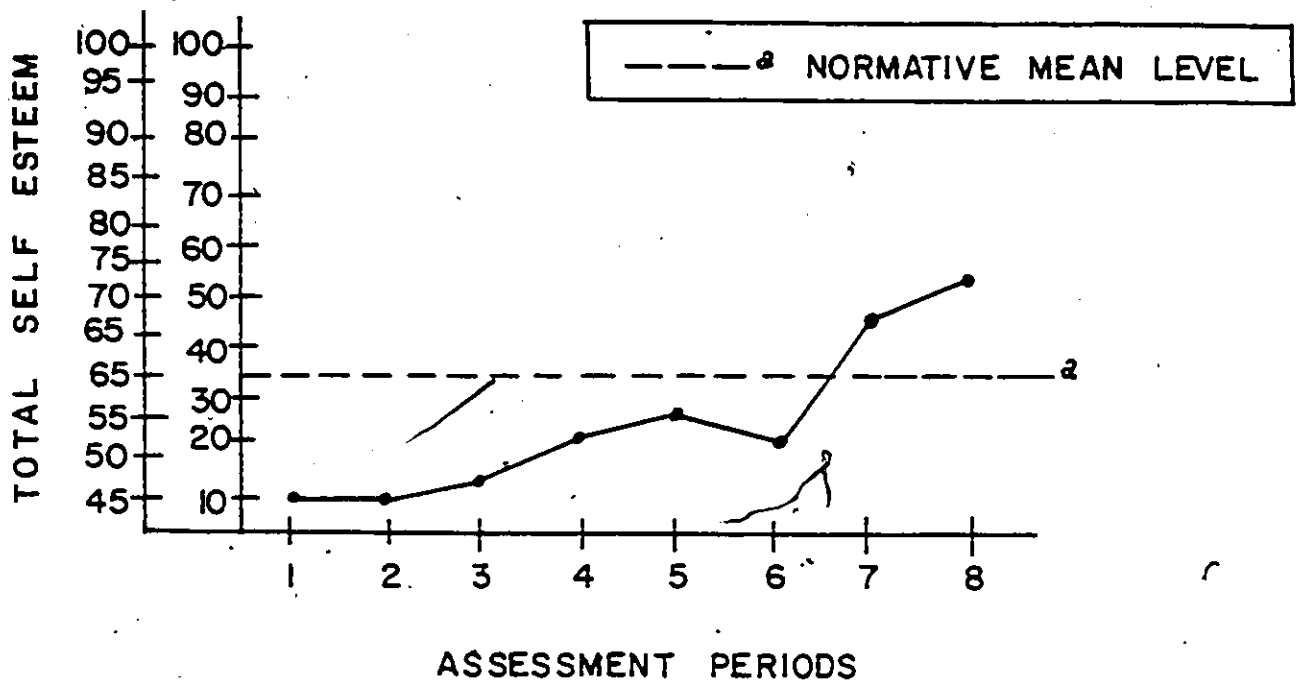
The second specific research expectation hypothesizes that there will be a positive change in the way Charles assesses his own self worth.



KEY

- BASELINE PERIOD
 - 1 DECEMBER 1975
 - 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
 - 3 APRIL 1976
 - 4 JUNE 1976
 - 5 AUGUST 1976
 - 6 OCTOBER 1976
 - 7 DECEMBER 1976
- FOLLOW-UP PERIOD
 - 8 FEBRUARY 1977

5 FIGURE 51 CHARLE'S SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.



KEY

BASELINE PERIOD

- 1 DECEMBER 1975
- 2 FEBRUARY 1976

APP REMEDIAL PERIOD

- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976

- 6 OCTOBER 1976
- 7 DECEMBER 1976

FOLLOW-UP PERIOD

- 8 FEBRUARY 1977

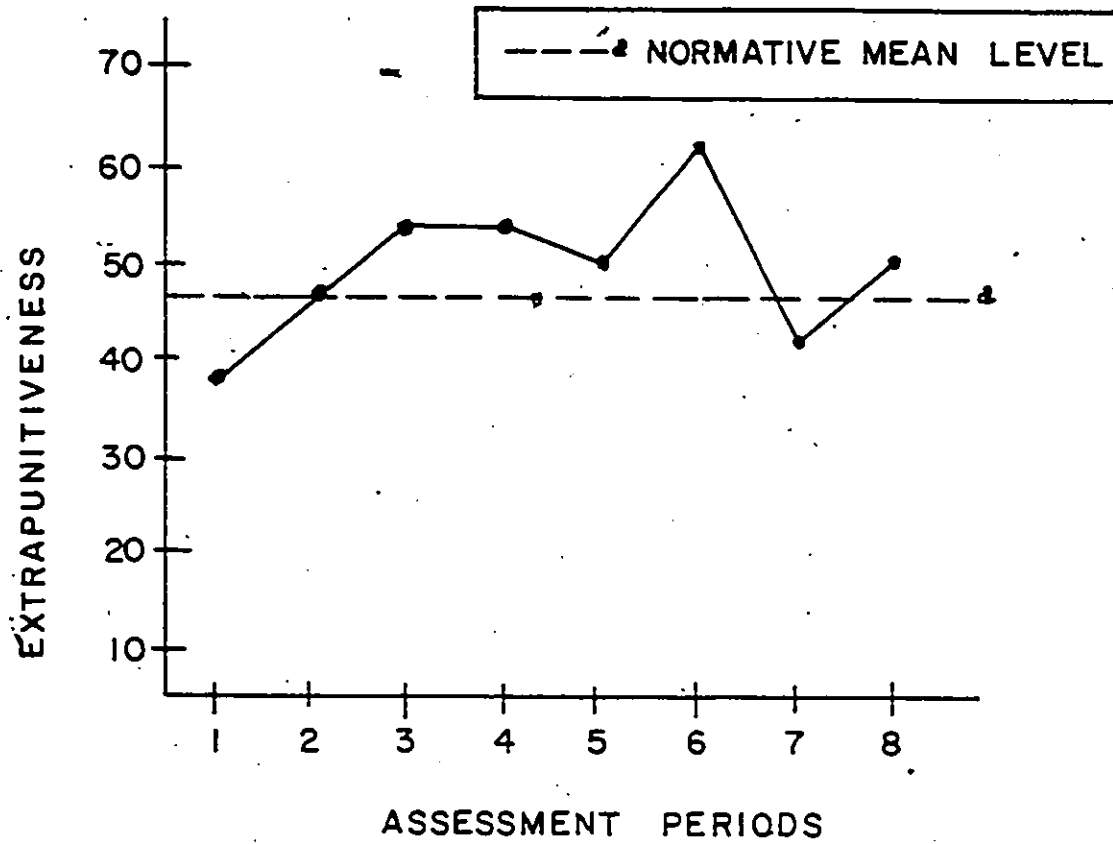
FIGURE 52 CHARLE'S SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.

Three out of the five scales on Charles' SEI showed baseline stability: home-parental esteem, general self esteem and total self esteem. All three of these scores rose concurrent with the remedial period, and continued rising over the followup period. Charles' total self esteem rose from the 17th %ile., before the intervention period, to the 50th %ile., by the start of the followup. Charles' social self esteem fell during the baseline period, but then rose substantially over the intervention, levelling off over the followup. His school self esteem, on the other hand, showed a strong ascending trend over the baseline, then rose over the remedial period, and leveled off over the followup period.

Although there was some variance in the degree of improvement, the generalized finding is in accord with the previously stated teacher findings: that Charles had a marked degree of improvement in his self confidence and esteem over the remedial period, and this was seen in most of the areas measured. This leads to supporting this second specific research expectation.

The child's ability to cope with frustration

All of Charles' direction of aggression scores (see figures 53 through 55), exhibited variability during the baseline period. His extrapunitive score showed a moderate rise over the first three assessment periods, reaching above the normative mean. After remaining fairly stable, for two periods, this score spurted between periods 5 and 7, falling below the mean by this latter period. It then showed a small rise over the followup period, reaching to slightly above the mean level.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

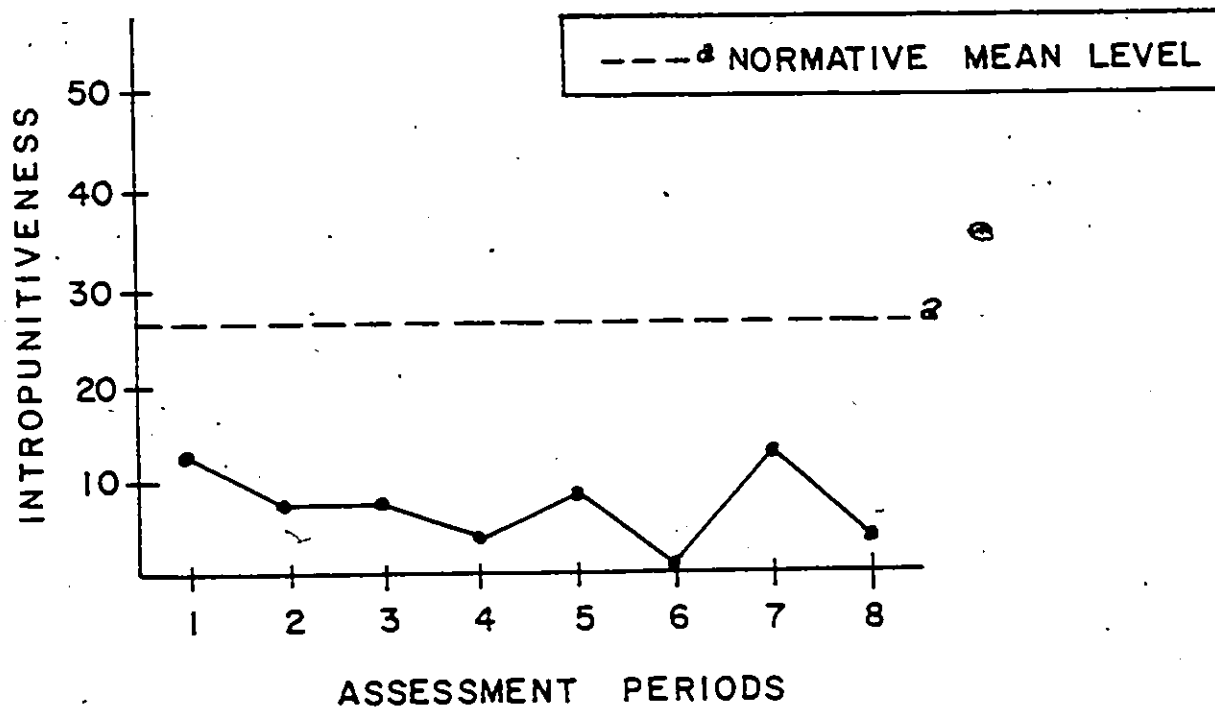
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 53 CHARLES EXTRAPUNITIVE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

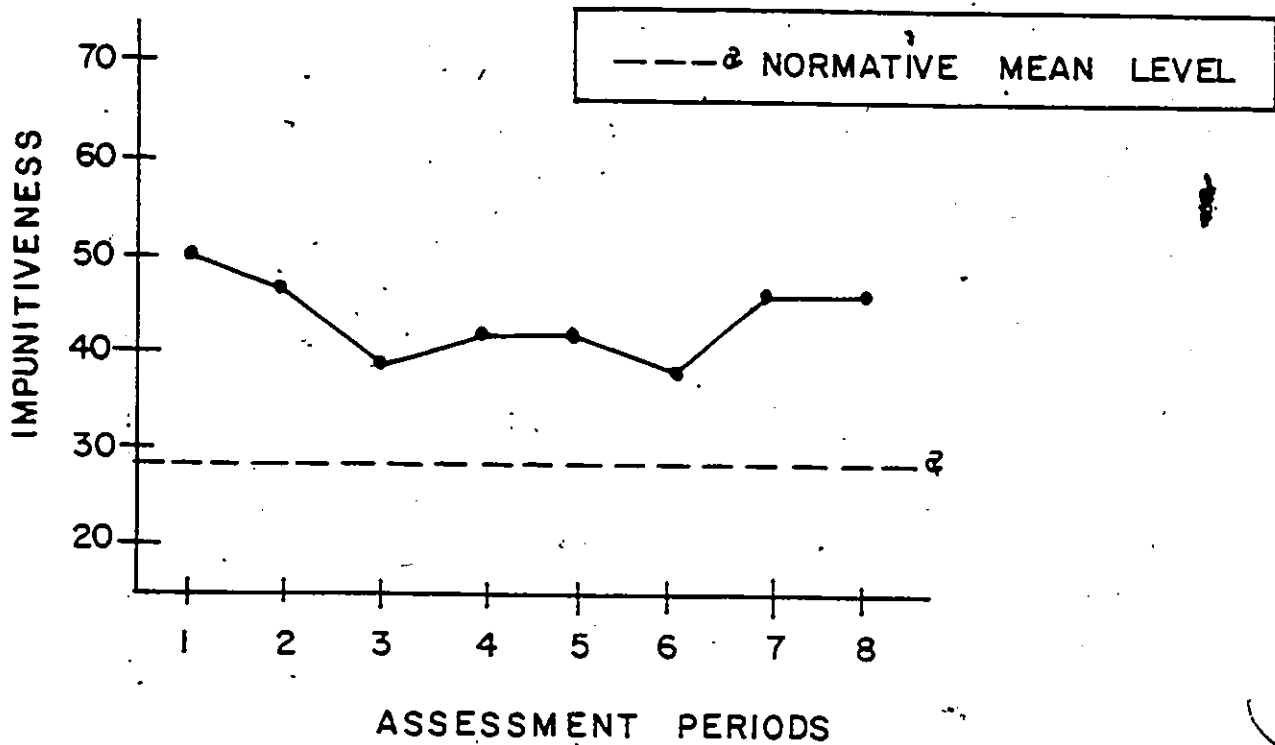
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 54 CHARLE'S INTROPUNITIVE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 55- CHARLE'S IMPUNITIVE ROSENZWEIG SCORES.

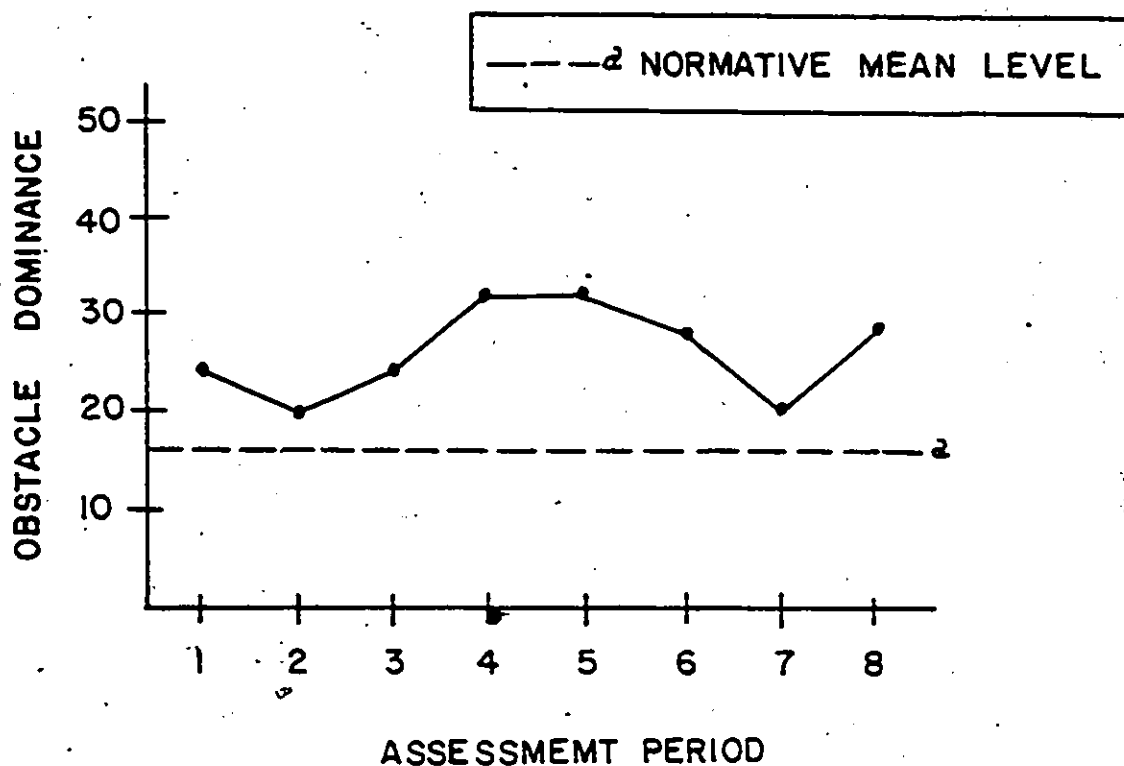
Charles' intro-punitiveness score remained below the normative level for the entire study. After showing a small decline during the baseline, this score showed only minimal variation until it fell to 0 responses by assessment period 6. Charles' I score spurted moderately over the final three periods, but remained well below the normative level.

Charles' impunitiveness score remained above the normative mean for the entire study. After showing a moderate decline over the first three assessment periods, this score exhibited only minimal variation until it showed a small rise between periods 6 and 7. It remained stable over the followup period.

As can be seen by figure 56, Charles' obstacle-dominance score remained above the normative mean for the entire study. After remaining fairly stable during the baseline period, showing only minimal decline, this score rose moderately by assessment period 4. It remained stable for two months, then fell moderately to baseline levels by the end of the intervention. This O-D score showed a small increase over the followup period.

After remaining stable during the baseline period, slightly above the normative level, Charles' ego-dominance score showed a general downward trend (see figure 57). The exception to this was a moderate spurt between period 6 and 8. It ended the study, moderately below the normative mean.

Charles' need-persistence score remained fairly stable, moderately below the mean level, showing only a minimal gain during the baseline (see figure 58). After spurted to slightly above the mean, between periods 2 and 4, this score gradually rose back to



KEY

BASELINE PERIOD

1 DECEMBER 1976

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

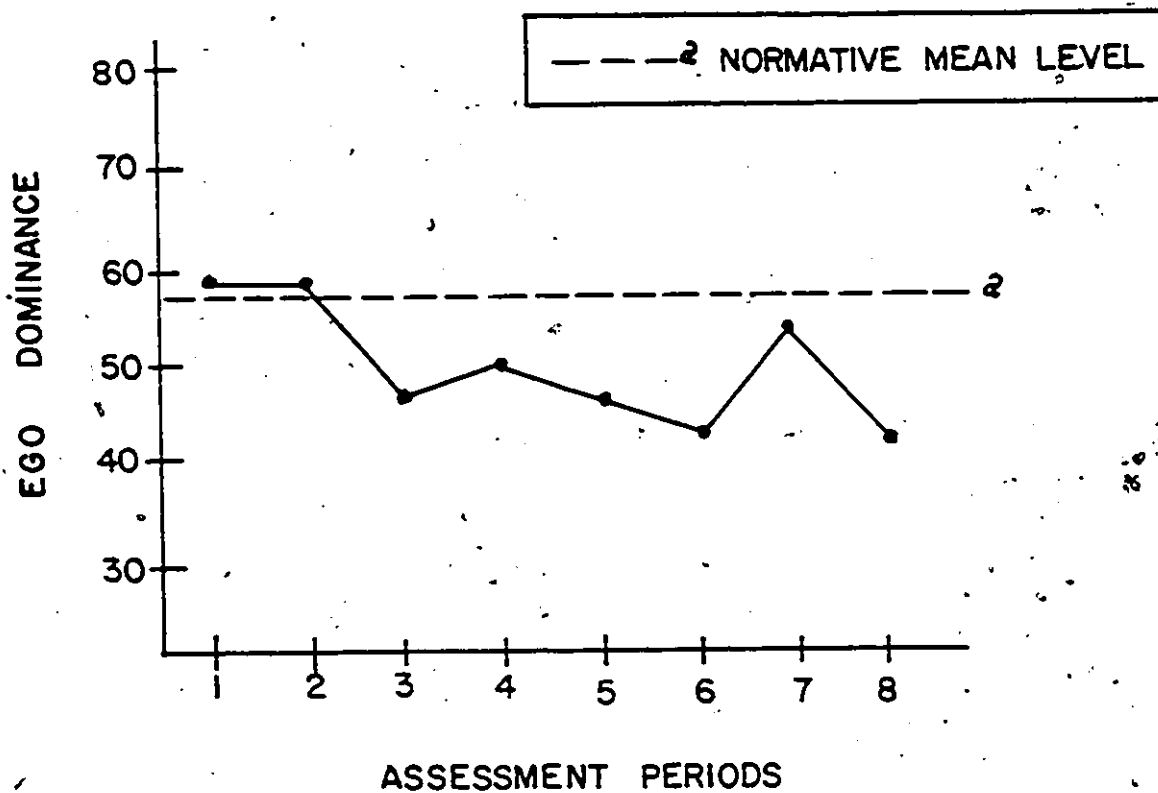
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 56 CHARLE'S OBSTACLE DOMINANCE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

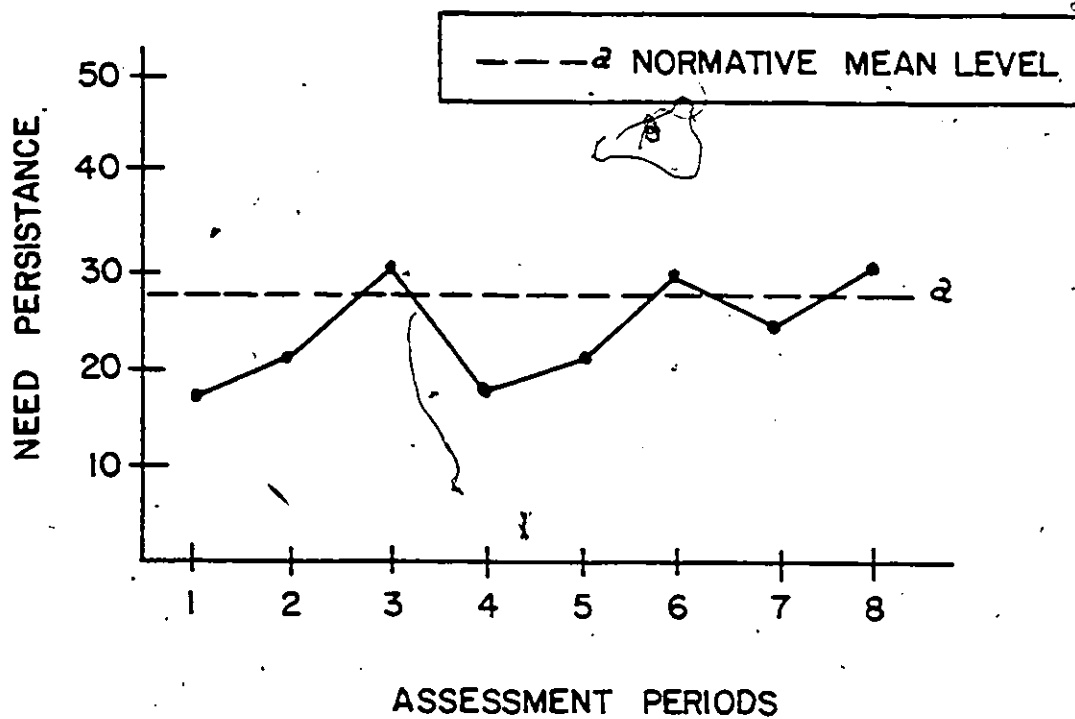
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 57 CHARLE'S EGO DOMINANCE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 58 CHARLE'S NEED PERSISTENCE ROSENZWEIG SCORES.

Table #19

Charles' Rosenzweig Responses

Scale	Assessment Periods								Read	Norm
	1	2	3	4	5	6	7	8		
Total Percentage Score										
Direction of Aggression										
E*	38	46	54	54	50	63	42	50	54.9	46.0
I*	13	8	8	4	8	0	13	4	10.0	25.6
M*	50	46	38	42	42	38	46	46	26.2	28.5
Focus of Aggression										
OD*	25	21	25	33	33	29	21	29	15.4	16.3
ED*	58	58	46	50	46	42	54	42	60.8	56.4
NP*	17	21	30	17	21	30	25	30	24.7	27.2
Broken Down Response Patterns										
Direction of Aggression										
E										
A-C*	4	5	9	8	7	12	7	10	6.3	5.9
C-C*	5	6	4	5	5	5	2	2	7.3	6.9
I										
A-C	2	2	1	1	1	0	2	0	3.8	4.3
C-C	1	0	1	0	1	0	1	1	1.8	1.7
M										
A-C	9	8	5	6	7	5	6	5	4.0	3.7
C-C	3	3	4	4	3	4	5	6	2.7	3.3
Focus of Aggression										
OD										
A-D	5	3	4	6	6	6	4	5	2.3	2.2
C-C	1	2	2	2	2	1	1	2	1.9	1.8
ED										
A-C	7	7	6	6	7	5	8	6	7.4	6.2
C-C	7	7	5	6	4	5	5	4	7.7	7.0
NP										
A-C	3	5	5	3	2	4	3	4	4.4	5.8

Reading disability norms taken from Spache, 1957.

Normative scores taken from Spache, 1957.

E* - Extrapunitiveness
 I* - Intropunitiveness
 M* - Impunitiveness
 OD* - Obstacle Dominance
 ED* - Ego Dominance
 NP* - Need Persistence

A-C* Adult Child
 C-C* Child-Child

Assessment Periods
 Baseline Period
 1-December 1975
 2-February 1976
 APP Remedial Period
 3-April 1976
 4-June 1976
 5-August 1976
 6-October 1976
 7-December 1976
 Followup Period
 8-February 1977

above the mean level by assessment period 6. It then dipped between periods 6 and 8, ending the study slightly above the normative mean level.

The third specific research expectation postulates that there will be a change in the way Charles conceptually handles frustrating experiences concurrent with the remedial process.

Charles' Rosenzweig results showed only minimal change concurrent with the intervention period. For most of the remedial period, all three of his direction of aggression scores (E, I and M) exhibited change. By the last scoring period at the end of APP, extrapunitiveness was unchanged, intropunitiveness was unchanged, and impunitiveness was unchanged. Charles' focus of aggression scores (OD, ED, and NP), also showed only minimal change. By the end of the remedial period, obstacle dominance exhibited no change, ego dominance fell minimally and need persistence rose minimally. The need persistence change was in accordance with the baseline trend. When the followup trends are accounted for, the only two scores that showed a concurrent effect was: a small rise in obstacle dominance; and a moderate fall in ego dominance.

In summary then, the remediation period, when taken in total, had only a minimal effect on the way Charles conceptually handled frustrating events. This third specific research expectation could thereby not be supported.

The child's personality traits and dynamic organization

Only three of Charles' primary CPQ traits and two second order factors exhibited a protracted change concurrent with the entire remedial process: Factor D, showed an upward change in level, from

just below the sten mean range to just above it; factor N reversed a downward baseline trend; and factor Q4 reversed an upward baseline trend. Only factor Q4, continued the trend evidenced during intervention into the followup period, as the other two factors returned to previous levels (see table 19).

The two second order factors that exhibited a change concurrent with the remedial period, were tough poise and independence, which reversed downward baseline trends during the remediation.

The rise in factor D (phlegmatic vs. excitable), and the rise in tough poise, are both closely linked and are indicative of an energizing effect. The change from a slightly phlegmatic temperament to a slightly excitable one, can be viewed in a positive light for Charles, for although he could be seen as more demanding and impatient, he also could be seen as more actively involved. As the authors view it, the tough poise factor is indicative of cortical alertness, an important ingredient in a child's active exploration of his environment. The changes in both these factors are very much in line with earlier stated teacher ratings of Charles' adjustment.

The fall, over the intervention period, in factor Q4 (ergic tension level), presents an interesting complement to the above changes, for although his physical activity level was increasing, he presents himself as more relaxed and tranquil in his dealings with his environment.

The upward reversal of the baseline trend in both factor H (naivete vs. shrewdness) and the independence factor appear congruent. Factor N is indicative of social awareness, and this result suggests that Charles was becoming more polished and astute

Table 20

Charles' CPQ Results for the Baseline,
APP Remedial and Follow-up Periods

Trait	Assessment Periods				
	Baseline		APP Remediation		Follow-up
	12/75	2/76	7/76	12/76	2/77
Primary Source Traits					
A	3	2	5	2	4
C	6	5	7	4	6
D	4	4	5	7	4
E	9	6	6	8	6
F	6	6	9	6	5
G	5	4	2	1	3
H	5	5	6	5	8
I	6	6	5	7	7
J	4	5	6	6	4
N	6	5	7	8	6
O	5	5	3	6	1
Q3	5	5	4	5	5
Q4	7	8	6	5	2
Second Order Factors					
Extraversion	5.4	5.3	6.4	5.1	5.7
Anxiety	5.6	5.9	5.9	6.4	4.5
Tough Poise	5.3	5.4	5.8	6.1	5.6
Independence	5.6	4.9	5.5	5.8	4.0

All trait scores are listed in sten scores.

Average sten scores for all primary source traits are 5 and 6.

Mean score of second order factors are 5.5, S.D.-2.0.

in his dealings with others. In essence, he was becoming more field-independent in his ability to interact within his milieu. These results are very much in line with earlier presented teacher ratings.

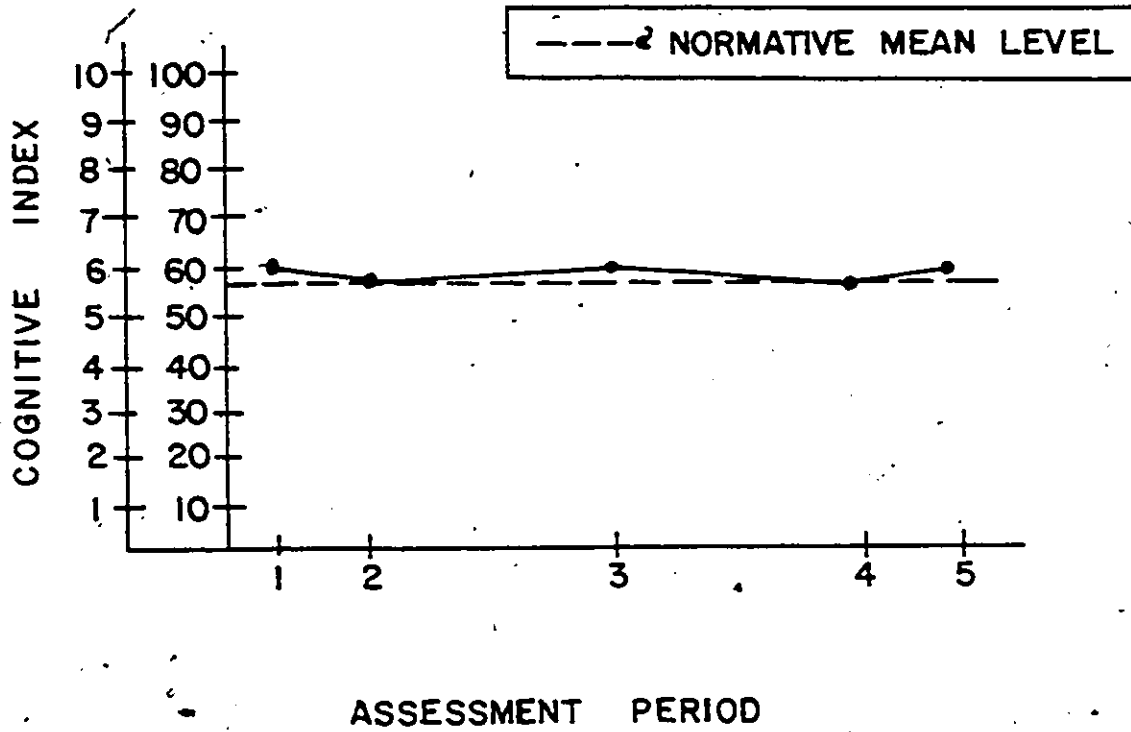
A number of other factors in Charles' CPQ profile exhibited extreme variation at some points during the study, but it appears, in all instances, that these were transitory changes as the extreme trends were quickly reversed.

As can be seen by figures 59 and 60, which shows Charles' Rorschach Rating Scale, both his cognitive and affective index's remained fairly stable during the baseline period. The third index on this scale, the personalization index (see figure 61), fell by a small degree during the baseline. All three of these scales were slightly above the mean levels during the baseline period.

Both Charles' cognitive and personalization index's remained relatively stable for both the intervention and the followup periods. His affective index exhibited a moderate rise for the first five months of intervention, then remained stable for the latter five. This index fell by a small degree over the followup period.

The fourth specific research expectation postulates a positive change in the underlying dynamic organization of the child concurrent with the remedial period. This change should be evidence in both Charles' cognitive and affective index's as well as in his level of personalization.

Charles' cognitive index did not reveal any specific overall change concurrent with the remedial period, as it fluctuated only



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

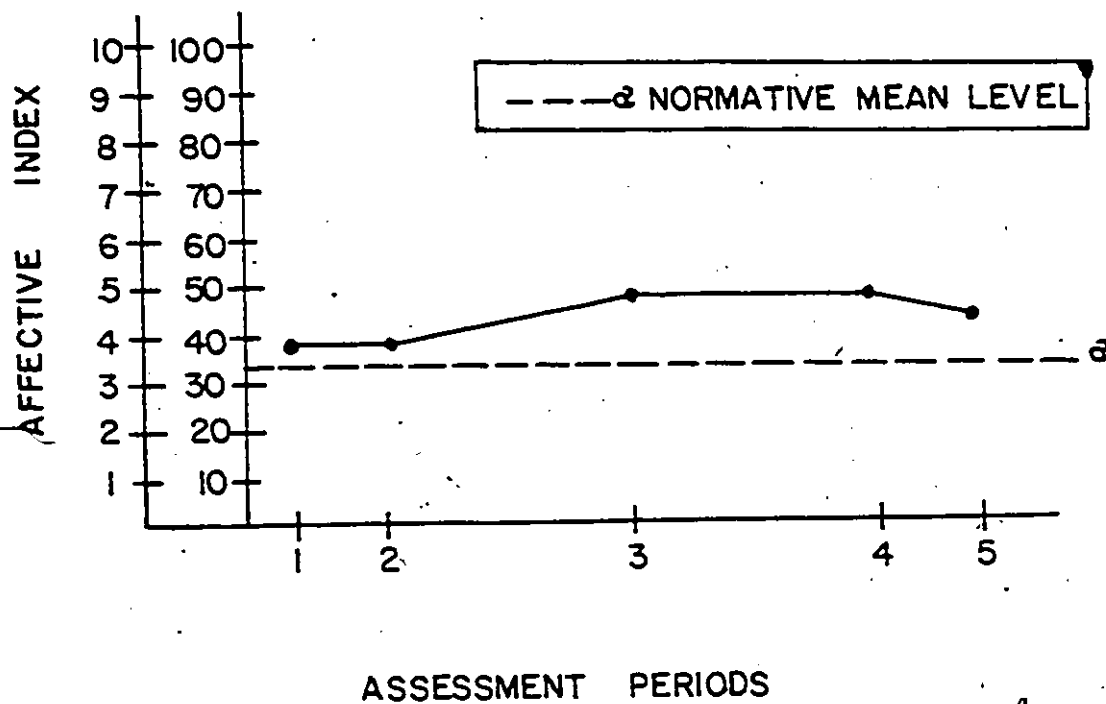
3 JULY 1976

4 DECEMBER 1976

FOLLOW-UP PERIOD

5 FEBRUARY 1977

FIGURE 59 CHARLE'S R R S COGNITIVE INDEX.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

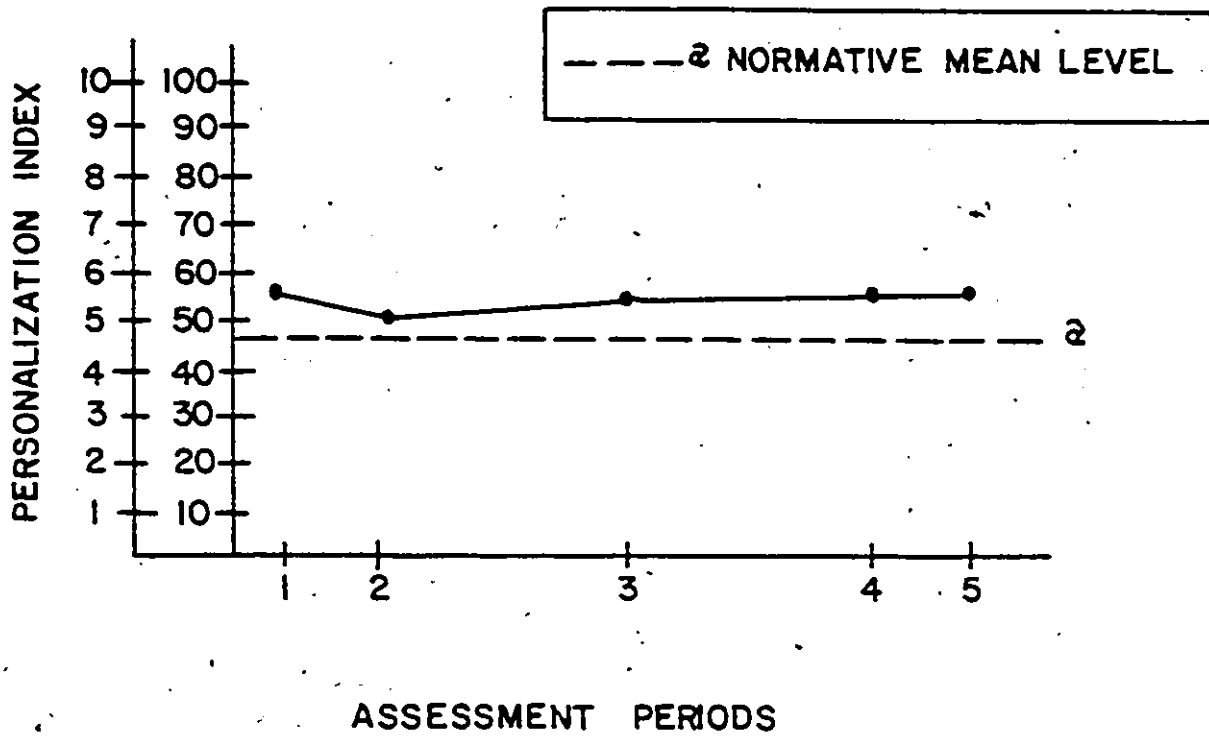
3 JULY 1976

4 DECEMBER 1976

FOLLOW-UP PERIOD

5 FEBRUARY 1977

FIGURE 60: CHARLES'S R.R.S. AFFECTIVE INDEX.



KEY

BASELINE PERIOD
 1 DECEMBER 1975
 2 FEBRUARY 1976
 APP REMEDIAL PERIOD
 3 JULY 1976
 4 DECEMBER 1976
 FOLLOW-UP PERIOD
 5 FEBRUARY 1977

FIGURE 6I: CHARLE'S R.R.S. PERSONALIZATION INDEX.

minimally over the course of the study (see table 21). Within the context of this overall index though, two of the scales changed concurrent with remediation: scale 1 (quality of whole responses) exhibited a downward reversal of baseline trend which carried into the followup period; and scale 4 (form controlled determinants) exhibited an upward reversal of baseline trend.

It is interesting to note that although the quality of Charles' W response fell, the percentage of them in his protocol rose (see table 21). So although he was making more of an attempt at both abstraction and integrating aspects of his environment, he was not being as successful at it. The rise in the quality of form controlled determinants points to a more realistic cognitive attitude being expressed at this time.

Charles' affective index showed a strong upward change in level over the remedial period. This change was mostly the result of scale 6 (form shading integration), which showed no scorable responses during the baseline. Charles gave 1K response by the mid point in intervention and 1KF by its termination (see table). The K response is usually associated with unmet affective needs (Schaftel 1958). When taken in total context, this type of response appears to fit into Charles' overall protocol. Other tests reveal a striving for independence and more social involvement on his part. The first half of the remedial process was quite dramatic for Charles as seen by the Rorschach and other tests. Although his affective index showed higher structural integration (also partially the result of stronger FC integration) his sum C₂ score also rose sharply. So while his reactivity toward his milieu rose, his

Table #21

Charles' Rorschach Responses

	Baseline Period		Assessment Periods		
	12/75	2/76	7/76	12/76	Follow-up 2/77
Total R	17	25	23	29	27
Location Scores					
W%	35	20	30	37	40
D%	53	56	43	48	44
d%	0	4	4	0	3
Dd%	12	20	21	13	11
Determinant Scores					
F%	35	32	26	37	33
M	2	3	2	1	1
FM	5	6	5	10	10
m	lmF	1Fm, 2mF	3Fm, lmF	1FM, lmF	2Fm, lmF
FK	0	0	1K	1KF	0
Fc	1	1	1	2Fc, 1cF	2Fc
FC	0	0	0	0	0
FC	3	4	4	3	2
CF	1	0	3	0	2
C	1	1	0	1	0
Quantitative Scores					
M:FM	2:5	1:2	2:5	1:10	1:10
Sum C	4	3.5	5	3	3
FC:CF+C	3:2	4:1	4:3	3:1	1:1
M:Sum C	1:2	3:3.5	2:5	1:3	1:3

Table #22

Charles' Developmental Rorschach Rating Scale Scores

Scale	Scoring Periods				
	Baseline Period		Remedial Period	Period	Follow-up Period
	12/75	2/76	7/76	12/76	2/77
C.I.*	5.80	5.60	5.70	5.40	5.70
A.I.*	3.90	3.90	4.80	4.80	4.30
P.I.*	5.40	5.00	5.30	5.30	5.30
A					
(1)	3.00	3.20	3.00	2.81	2.72
(2)	2.70	2.50	2.92	2.36	2.93
(3)	2.83	2.62	2.66	2.45	2.66
(4)	3.09	2.86	2.88	3.06	3.00
B					
(5)	2.40	2.40	2.75	2.28	3.00
(6)	0.00	0.00	1.00	2.00	0.00
(7)	3.00	3.00	3.00	3.00	2.50
C					
(8)	2.71	2.33	2.45	2.66	2.57
(9)	2.69	2.68	2.81	2.65	2.72

a 0 indicates no scorable responses given

A - Cognitive Integration

- (1) Whole Responses
- (2) Part Responses
- (3) Form Level
- (4) Form-Controlled Determinants

B - Affective Integration

- (5) Form-Color Integration
- (6) Form-shading Integration
- (7) Texture Integration

C - Personalization

- (8) Quality and Balance of Movement
- (9) Quality and Balance of Movement, Shading and Color

*C.I.- Cognitive Index

A.I.- Affective Index

P.I.- Personalization Index

ability to interact with it (partly because of parental attitudes), apart from his school setting, did not.

Although Charles' personalization index exhibited a positive reversal of baseline trend during remediation, this increase was minimal. By the end of the remedial period, Charles' M:FM ratio was heavily favoring FM (1:10). This could be taken as a sign of impulsivity. But because his FC:CF & C ratio still favored FC, his M:FM ratio is viewed as social immaturity, but within appropriate limits.

Considering all these points, the final specific research expectation can be only partially supported. There were strong signs of improvement in Charles' affective integration, but the lack of change in his cognitive integration, as well as the only minimal change in his personalization index, forstalls total acceptance.

Summary of Psycho-Social Results

Behaviorally, a major change in Charles' psycho-social functioning was seen in both how others saw his self concept and adjustment as well as how he saw it. His teacher noticed a more trusting, less fearful approach on his part in relation to both his interactions and his school behavior. Both mother and teacher saw a generalized rise in Charles' self confidence level over the remedial period. And Charles himself, saw a generalized improvement in his own feelings of his self worth.

Charles' social skill level, for the most part, also improved over the remedial period. Charles was seen as acting more age appropriately, and involving himself in more peer related activities. This change though, was not a total realignment of his

social patterns, since he still acted at times with an egocentric immature style. This was not only seen in others' ratings, but in Rorschach analysis as well.

Another major change in Charles' psycho-social functioning was in both his energy level and in his ability to direct that energy in more task related activity.

There were also signs that concurrent with the remedial process, there was a positive change in Charles' affective integration. With the improvement in his field independence and his growing phenomenal self structure, Charles showed strong signs of the maturing of his individuation skills.

Child #5-Darryl

APP Remedial Programming

Darryl's passive phase of programming was marked by substantial variability. Because of open selectivity, Dr. Tomatis felt this first phase could be short. He recommended 20 sessions of filtered music followed by 20 session of a substitute filtered voice (a substitute filtered voice was used because the natural mother's voice was unavailable). Sonic birth was attempted after 40 session but Darry's behavior began regressing once on the active performing phase. It was then decided to return to passive programming. After another 40 sessions, sonic birth was again attempted. Darryl's subsequent behavior again regressed, indicative that he was not yet ready for learning. Passive listening was initiated a third time. This lasted until the end of June (after 140 sessions) when he appeared more settled and willing to put energy into training.

Listening test results during this period indicated steady progress was being made. Spacialization errors disappeared early on and selectivity remained open.

Darryl worked on the performance phase from mid July to early October (encompassed 90 sessions). Listening test results remained positive during this period.

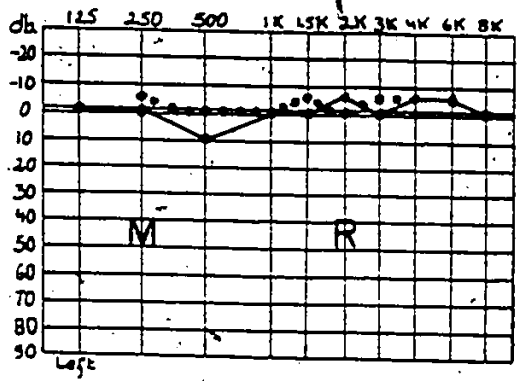
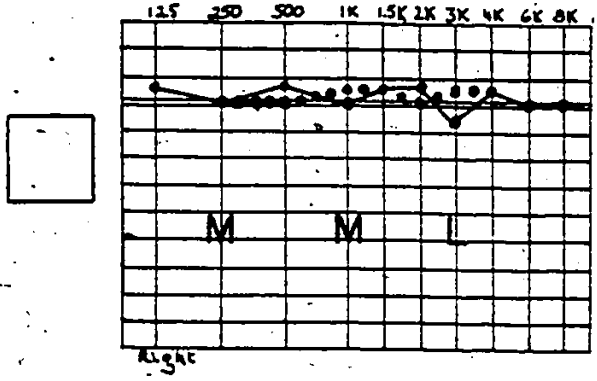
Darryl's training phase began in October and lasted until the end of intervention in December, including over 60 sessions. Reading was purposefully taken at a slow pace for fear of losing motivation.

Criterion Results

Darryl's myklebust learning quotient rose from a baseline level of 77, to a post remediation level of 83 (see table 23). This final score is still below the agreed upon cutoff score of 89 for learning disability. The Myklebust Pupil Rating scale rose from 64 to 71 over the remedial period. This puts him above the criterion cutoff score, and by this standard, Darryl would no longer be considered learning disabled.

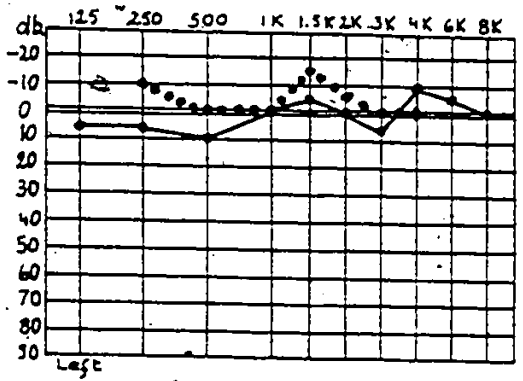
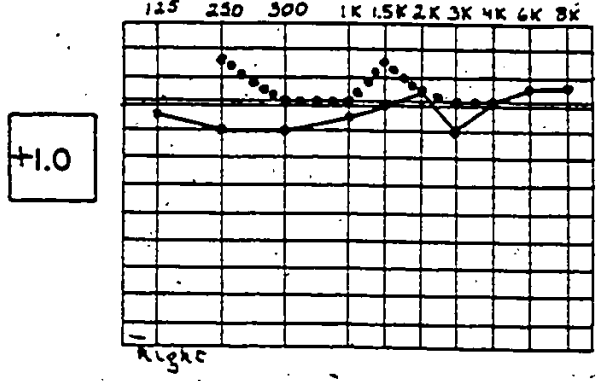
According to Tomatis' criterion, Darryl's APP re-education could be classified as moderately successful. On the positive side, spacialization errors disappeared and auditory selectivity remained open. Air conduction curves took on a more ascending curve during the remedial period, especially in the lower frequencies. Also, audiolaterometry showed a positive switch from a left ear advantage of +2 to a right ear advantage of +1. On the negative side, Darryl's bone conduction curve remained above the air with peaks at 250 hzs and 1.5 hzs.

Date: BASELINE TESTING

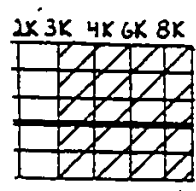


Examiner: _____

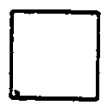
Date: FOLLOW-UP TESTING



Examiner: _____



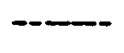
DIAGONAL LINES ARE INDICATIVE OF THOSE FREQUENCIES WHERE AUDITORY SELECTIVITY WAS CLOSED, AS MEASURED BY AUDITORY DISCRIMINATION (TOMATIS 1978).



THE NUMBER WITHIN SIDE THE BOX INDICATES THE STRENGTH OF AUDIOLATEROMETRY--(TOMATIS LATERALIZATION TEST.)

R-L-M

A LETTER WITHIN GRAPH INDICATES SPECIALIZATION ERROR



BONE CONDUCTION CURVE



AIR CONDUCTION CURVE

FIGURE E TOMATIS LISTENING TEST CHILD #5 DARRYL.

Table #23

Darryl's Academic Testing Results for
Baseline, APP and Followup Periods

Test	Scoring Periods							
	Baseline Period		APP Remedial Period				Followup Period	
	12/75	2/76	4/76	6/76	8/76	10/76	12/76	2/77
W.I.S.C.-R.								
Verbal I.Q.	108							105
Performance I.Q.	111							112
Full Scale I.Q.	110							109
W.R.A.T.								
Reading	1.8	2.5	2.6	3.1	3.4	3.5	4.1	4.3 ^a
Spelling	1.8	1.6	2.2	2.2	2.3	2.2	2.6	2.9
Arithmetic	2.6	3.0	3.9	4.5	4.2	3.9	4.2	4.5
Gates-McGinitie								
Vocabulary	1.9	2.3	3.2	2.8	2.5	2.9	3.1	3.5
Comprehension	1.4	1.6	2.0	1.8	1.7	2.1	2.7	2.2
Composite Academic Index	1.9	2.2	2.8	2.9	2.8	2.9	3.3	3.5
P.B.R.S.								
Verbal	23	22						24
Non-Verbal	42	42						47 ^b
Total	65	64						71 ^b
Learning Quotient	77							83 ^c

^a All scores are in grade equivalents by year and month.

^b Highest score is 120, with 70 being the cutoff for L.D.

^c Cutoff score for learning disabilities is 89.

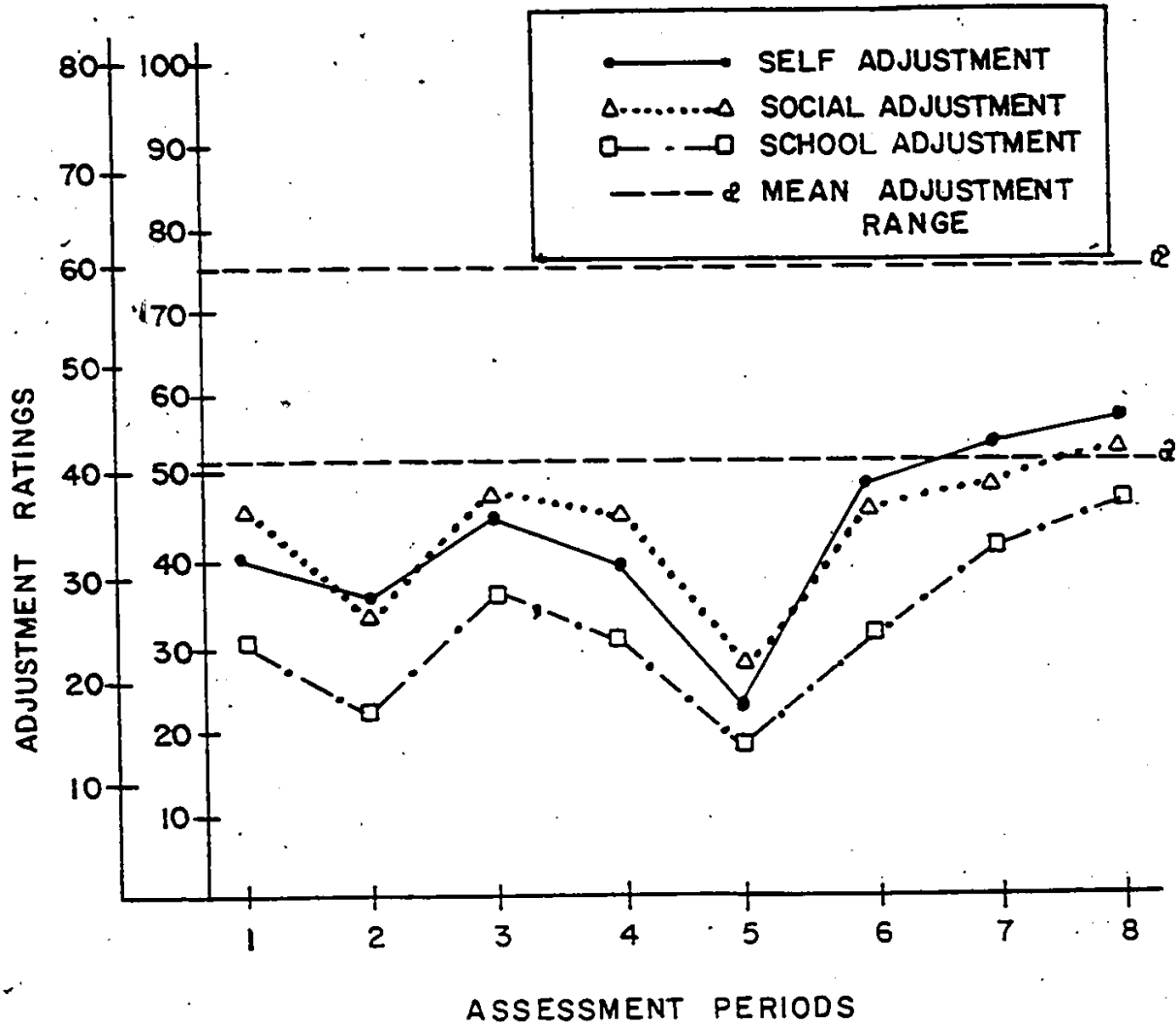
In reviewing Darryl's composite academic index, although it rose by three months over the baseline period, it rose by 1 year, 1 month over the intervention period.

How significant others view the child

All three of Darryl's adjustment ratings by his teacher exhibited the same general trend (see figure 62). Beginning the study below the average adjustment range, all three scales fell during the baseline period. However, by the third assessment period, they had risen to above baseline levels. All three scales showed a moderate dip between assessment periods 4 and 6. By the end of the intervention period, all three of the adjustment scales had risen to higher levels than during the baseline period. All three scales remained fairly stable over the followup period, rising only minimally. By the end of the study, two of Darryl's adjustment scales, self and social adjustment, had risen to within the average range, with school adjustment almost reaching that level.

Darryl's two adjustment ratings by residential staff began the study at the lower end of the average adjustment range (see figure 63). During the first three assessment periods, Darryl's self adjustment rating showed only minimal variation, then fell by a small degree by period 4. Between assessment periods 4 and 6, this rating exhibited a moderate-marked dip, reaching back to the lower end of the average range. This scale exhibited only minimal variation over the final three periods.

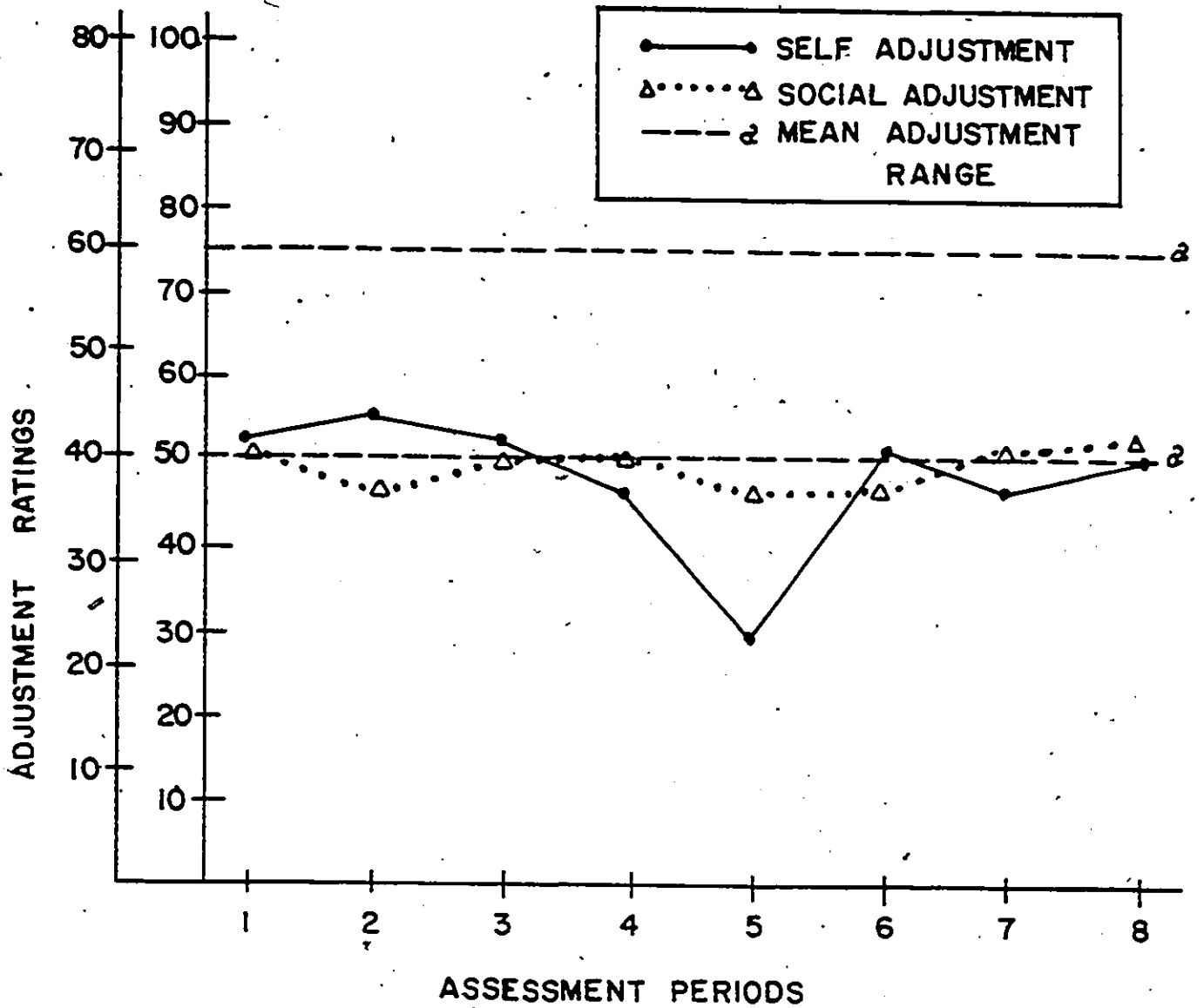
Residential rating of Darryl's social adjustment varied only minimally over the course of intervention, ending the study at the level where it began (see figure 63).



KEY

- BASELINE PERIOD
- 1 DECEMBER 1975
- 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976
- FOLLOW-UP PERIOD
- 8 FEBRUARY 1977

FIGURE 62 DARRYL'S ADJUSTMENT RATINGS ON THE CHILD BEHAVIOR RATING SCALE AS MEASURED BY HIS TEACHER



KEY

BASELINE PERIOD

- 1 DECEMBER 1975
- 2 FEBRUARY 1976

APP REMEDIAL PERIOD

- 3 APRIL 1976
- 4 JUNE 1976
- 5 AUGUST 1976
- 6 OCTOBER 1976
- 7 DECEMBER 1976

FOLLOW-UP PERIOD

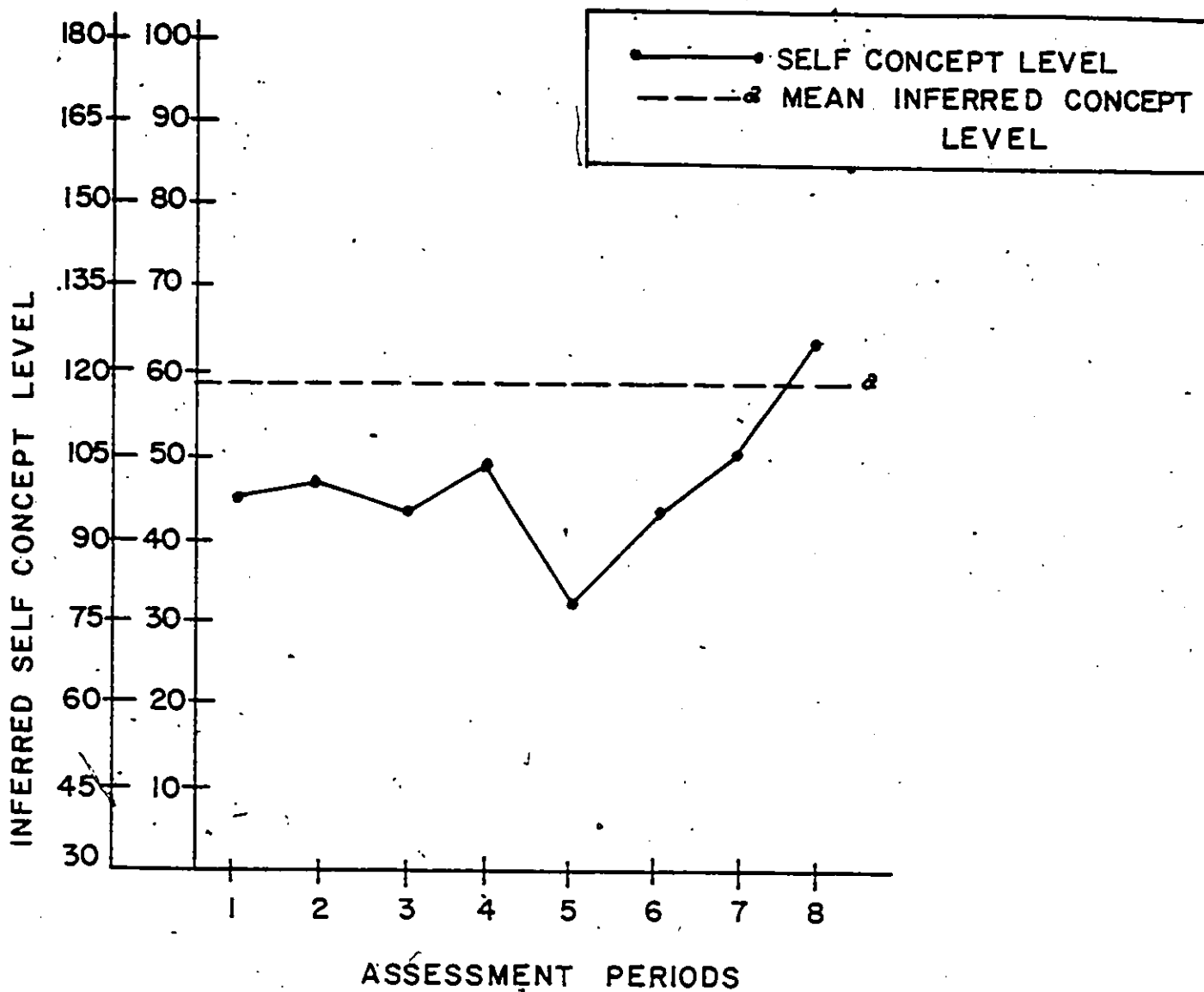
- 8 FEBRUARY 1977

FIGURE 63 DARRYL'S ADJUSTMENT RATINGS ON THE CHILD BEHAVIOR RATING SCALE AS MEASURED BY RESIDENTIAL STAFF.

Darryl's self concept, as measured by his teacher, showed only minimal variation for the first three assessment periods, remaining a moderate degree below the mean level (see figure 64). It then rose by a small amount by period four, but exhibited a moderate dip between periods 4 and 6. Over the remainder of the study, Darryl's self concept rose markedly, reaching above the mean level.

The first specific research expectation postulates that there will be a positive change in the way significant others view Darryl's social and self adjustment, concurrent with the remedial process.

The major problem areas seen in Darryl's self adjustment by his teacher during the baseline period, was his variable mood swings, as well as his denial of acceptance of responsibilities. He was seen generally as a very warm, happy child whose euphoric moods could easily become deflated, which would lead to sulking and whining. His rating showed a gradual upward trend during the intervention period (save a sharp decline in August), eventually reaching to within the average adjustment range. It continued rising over the followup period. The major positive changes appear to have been centered around his improved level of responsibility as well as the appropriateness of his behavioral reactions. He no longer would make excuses or alibis for his mistakes, and his held values fit more in line with those held by others. His behavior in general appeared more stable, and not subjected to such wide mood swings. He remained a very sensitive child, still sulking when things didn't go his way and at times would feel down about himself. According to



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 64 DARRYL'S INFERRED SELF CONCEPT AS MEASURED BY THE INFERRED SELF CONCEPT SCALE.

these ratings though, Darryl's overall confidence level did not improve concurrent with the remedial process.

Teacher ratings of Darryl's social adjustment fell by a moderate degree during the baseline period. This score exhibited only a small rise over the intervention period, but continued rising over the followup, reaching to within the average adjustment range. During the baseline period, the major problems brought out by the rating might be termed, Darryl's unsocialized egocentric reaction patterns. He was often quite aggressive with peers, usually ending in a physical confrontation, and he tended to try and show off in order to gain stature. He was also seen as quite selfish and self centered. His ratings also suggest that Darryl was not a good listener, making it difficult to carry on a pleasant conversation with him. His ratings, over the remedial period, suggest a generalized improvement in all these areas. More specifically, Darryl was seen as less aggressive in his interaction and less self centered and selfish within his peer group. His listening skill also appeared to change positively, concurrent with the remediation.

Darryl's school adjustment rating was the lowest of his teacher rated scales during the baseline period. Problems in this area centered around what could be called an attention deficit. He was very restless and unable to sit still, his mind tended to wander off and he would distract the other children in his class. Darryl was also seen as experiencing a lot of difficulty expressing himself in words.

Darryl's school adjustment rating by his teacher eventually reached to just below the average adjustment range by the followup period. The major area of improvement was seen as the amount of effort he was able to put into task oriented behavior. He was less restless during the day and appeared to be able to work harder, for longer periods of time. Although this was the case, he still had difficulty finishing his work, and at times could become fairly distractable.

Residential staff saw Darryl's self adjustment rising minimally during the baseline period, then falling somewhat over the remedial period. In general, ratings did not point to an improvement concurrent with the remediation, in Darryl's daydream activity and his emotional sensitivity. Residential staff saw Darryl's social adjustment as falling during the baseline period, but rising only slightly over remediation. As with the teacher ratings, they did notice an improvement in Darryl's ability to pay attention during conversation. They also saw a slight decrease in his aggressiveness.

Teacher rating of Darryl's self concept rose slightly over both baseline and remedial periods, but showed its strongest rise over the followup period. Minor upward variance was seen across a number of items, the major emphasis pointing toward more group related activity.

In summary, because of the discrepancies in teacher rated and residential rated adjustment scores, and the questionable change in self concept over the remedial period, this first specific research expectation could be only partially supported.

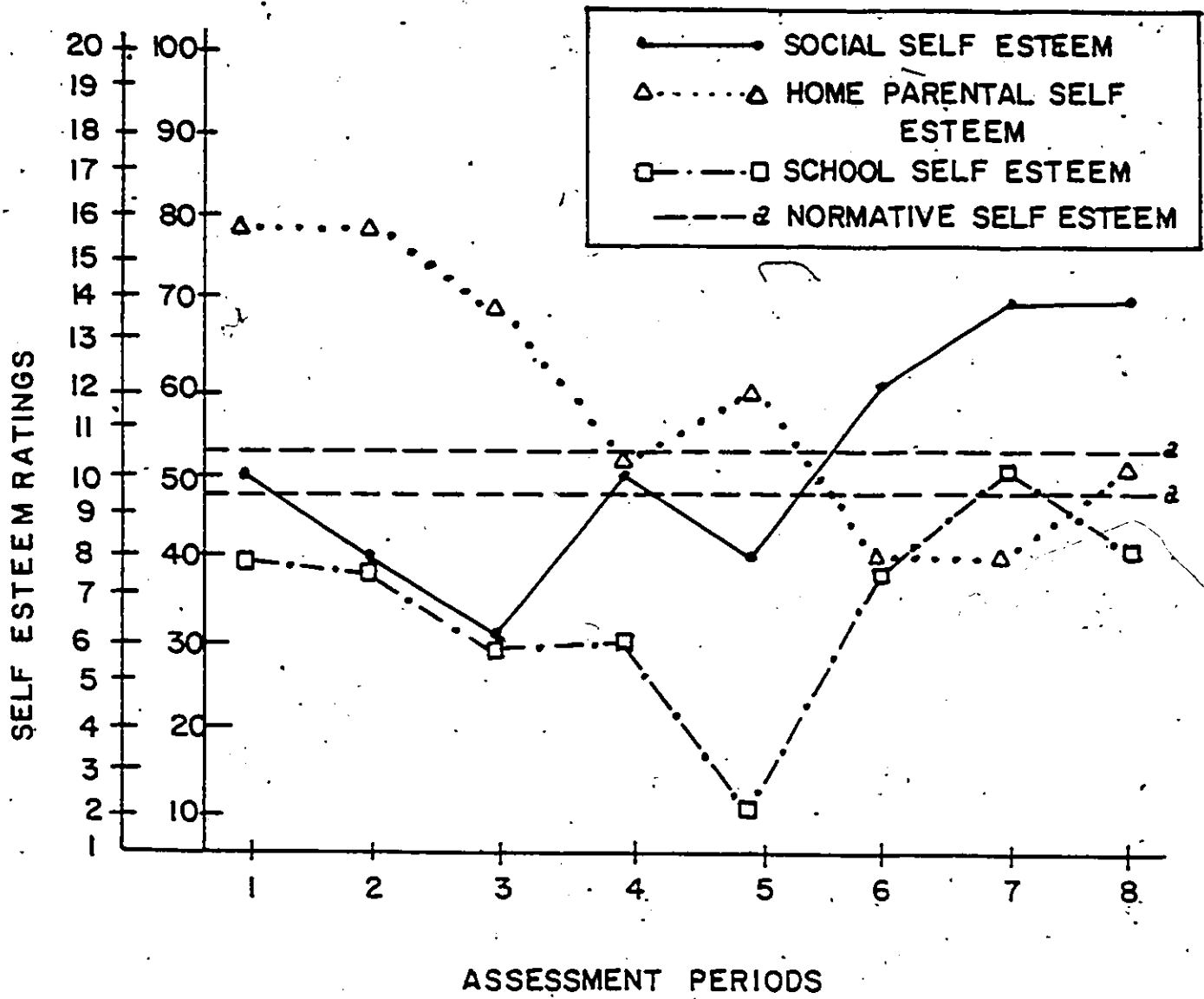
How the child views himself

As can be seen by figure 65, Darryl's social self esteem score was within the average range at the first assessment period, but showed a moderate decline for the next two successive periods. It then showed a marked increase reaching back to within the average range during the fourth assessment period. This esteem score then dipped between periods 4 and 6, reaching to the above the average level. By period 7, Darryl's social self esteem showed a moderate increase, and remained stable over the followup period, at this level.

Darryl's home-parental self esteem remained stable at more than one standard deviation above the mean during the baseline period. It then exhibited a marked decline, reaching to within the average range by assessment period 4. After a small rise in period 5, Darryl's home self esteem showed a marked decline, to below the average range by period 6. It remained stable at that level over period 7, then showed a moderate rise to within the average range over the followup period.

After remaining stable, slightly below the average range during the baseline period, Darryl's school esteem score fell until assessment period 5, falling moderately between periods 2 and 3, and markedly between periods 4 and 5. By assessment period 7, at the end of the intervention period, it had risen to within the average range. It fell off moderately again during the followup period.

Darryl's general self esteem remained fairly stable, more than one standard deviation above the mean, during the first three assessment periods (see figure 66). This score then showed a marked



KEY

BASELINE PERIOD
 1 DECEMBER 1975
 2 FEBRUARY 1976

APP REMEDIAL PERIOD
 3 APRIL 1976
 4 JUNE 1976
 5 AUGUST 1976
 6 OCTOBER 1976
 7 DECEMBER 1976

FOLLOW-UP PERIOD
 8 FEBRUARY 1977

FIGURE 65 DARRYL'S SPECIFIC SELF ESTEEM RATINGS. ON THE SELF ESTEEM INVENTORY.

decline by period 4, reaching to the mean score. Between the fifth and eighth assessment periods, Darryl's general esteem score had risen back to baseline levels.

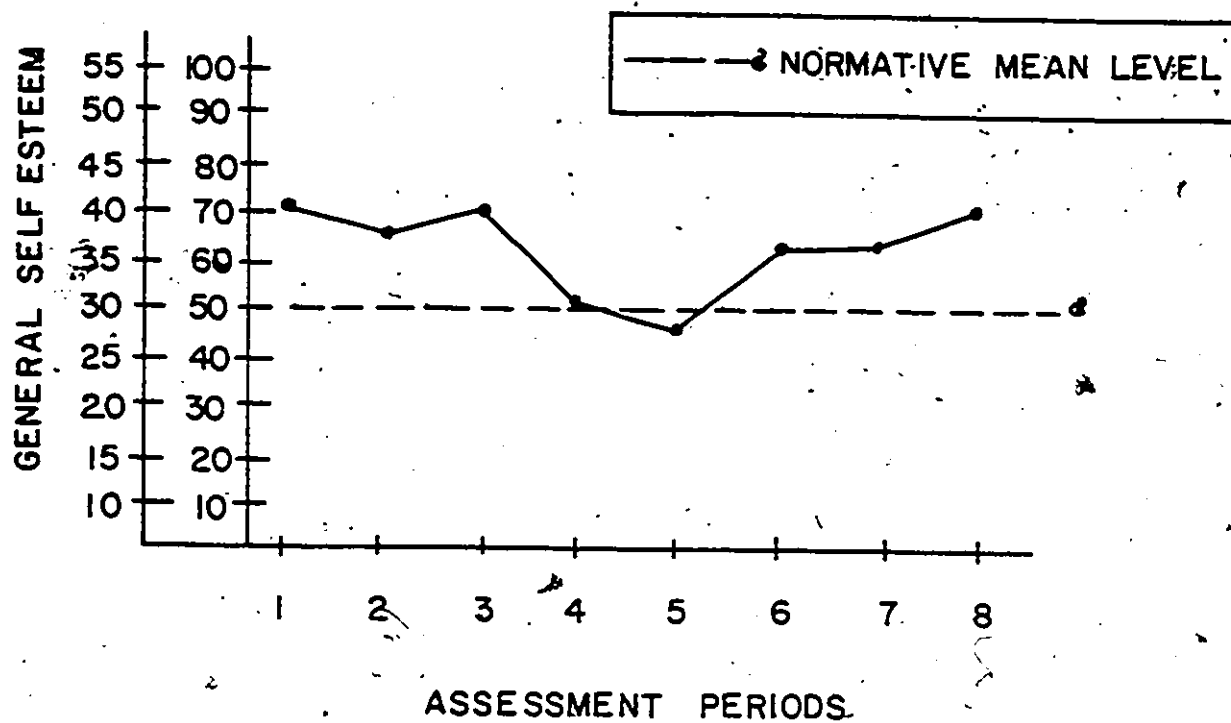
Darryl's total self esteem score exhibited the same general trend as his general esteem score, beginning more than 1 S.D. above the mean, falling by assessment period 5 to below the mean, and rising over the final three periods almost to baseline levels (see figure 67).

The second specific research expectation postulates a positive change in the way Darryl views his own self worth, concurrent with the remedial process.

When reviewing Darryl's esteem ratings (figures 65 through 67) one is initially struck by the amount of fluctuation in the various esteem levels over the course of the remedial period. During the baseline period, only one score, Darryl's social self esteem, hinted that such a wide variation would follow.

Darryl's social self esteem rose from mean baseline levels to more than one standard deviation above the mean during the followup period. He was obviously feeling more successful and comfortable about his interactions during the followup period. But when this score is compared to more objectified teacher and residential ratings, it appears somewhat aggrandized.

Darryl's home parental ratings, opposite that of his social ratings, began the baseline exaggerated and finished the study more realistic. It should be taken into account that he was in residential placement over the entire length of this study.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

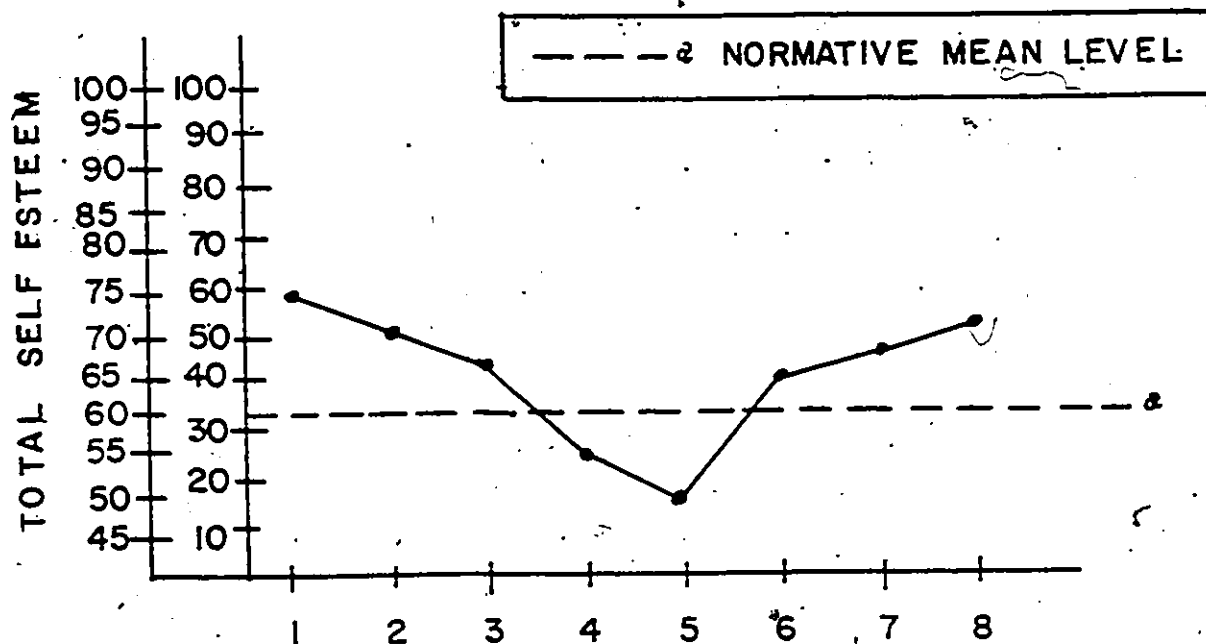
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 66 DARRYL'S SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW UP PERIOD

8 FEBRUARY 1977

FIGURE 67 DARRYL'S SELF ESTEEM RATINGS ON THE SELF ESTEEM INVENTORY.

Darryl's school academic esteem ratings exhibited the most fluctuation over the remedial period, falling to an extremely low level by assessment period 5, then rising back to within mean levels by the end of the remedial period, which was only four months hence.

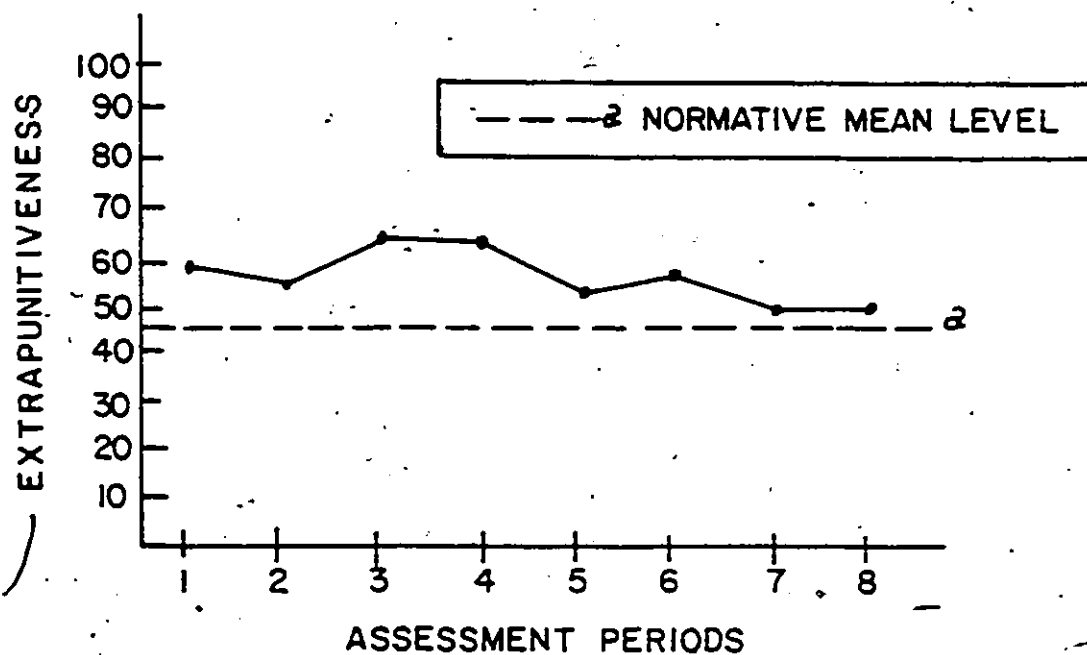
Four of Darryl's esteem scores (school, general, total, home) exhibited a downward trend over the first 6 months of the intervention period. This suggests a deflationary process during this time, which might indicate a re-evaluation period for him. What is clear, is that Darryl was feeling considerably worse about his own self worth during this period, than he had at the beginning of the baseline period. All of these scores, save home-parental esteem, rebounded over the final four months of intervention.

The marked variability in Darryl's esteem scores could very well have been attributable to what teacher and residential ratings suggest was his moodiness and affective lability. Because of what could be termed this extreme fluctuation, this second specific research expectation could not be supported.

The child's ability to cope with frustration

The majority of Darryl's scores on the Rosenzweig showed relative stability over the course of the study.

As can be seen by figure 68, Darryl's extrapunitive (E) score showed a small dip over the first three assessment periods, remaining above the norm. After remaining stable for two months, it then exhibited a small decline between assessment periods 4 and 5. It showed a small spurt between assessment periods 5 and 7, and then remained stable at that level over the followup period.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 68 DARRYL'S EXTRAPUNITIVE ROSENZWEIG SCORES.

Darryl's intro-punitive (I) score remained remarkably stable over the course of the study, centering itself around the norm (see figure 69). The only change of consequence in this score was a small minimal dip between assessment periods 3 and 5.

Darryl's impunitive (M) score exhibited a small-moderate spurt over the first three assessment periods, remaining below the norm for that period (see figure 70). It then showed a moderate rise by period 5, to slightly below the norm level, and remained fairly stable for the remainder of the study.

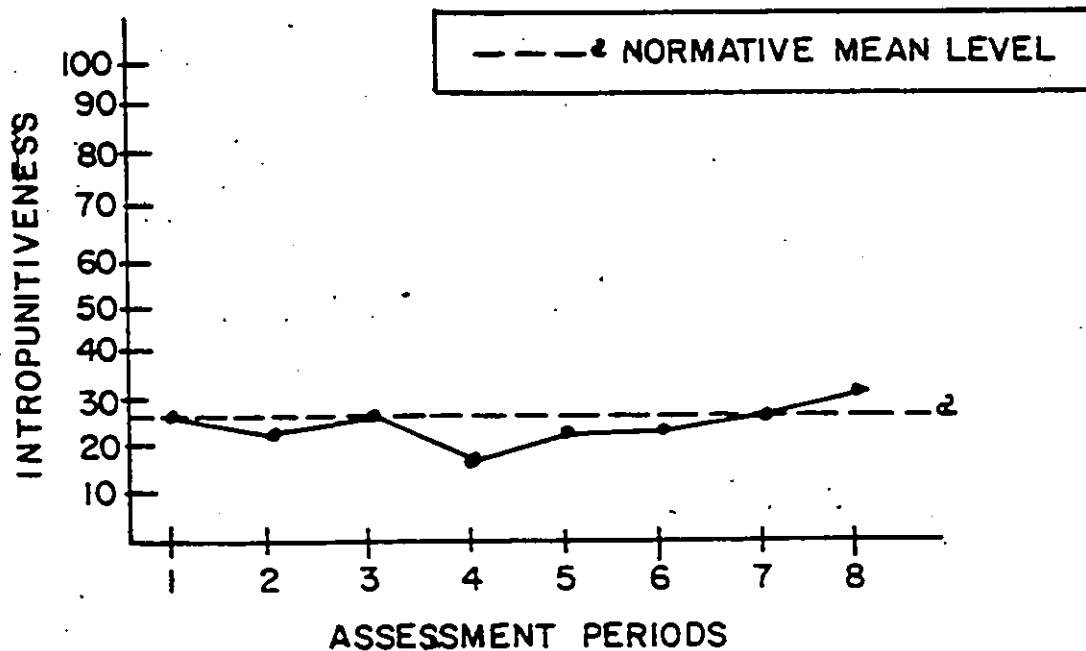
As with Darryl's M score, his obstacle dominance (OD) score remained relatively stable around the norm for the entire study, except for a small spurt between periods 3 and 5 (see figure 71).

As can be seen by Figure 72, Darryl's ego dominance score (ED) remained stable, slightly below the norm, during the baseline period. Over the next two assessment periods, it showed a moderate decline, which was followed by a moderate increase, placing it at the norm level by assessment period 7. It fell moderately over the followup period.

After a stable baseline period, which was slightly above the norm, Darryl's need persistence (NP) score showed a small amount of variability over the course of the study (see figure 73).

It ended the remedial period at the same level at which it began. It then showed a moderate increase over the followup period.

The third specific research expectation postulates that concurrent with the remedial period, there will be a change in the way that Darryl conceptually handles frustrating experiences.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

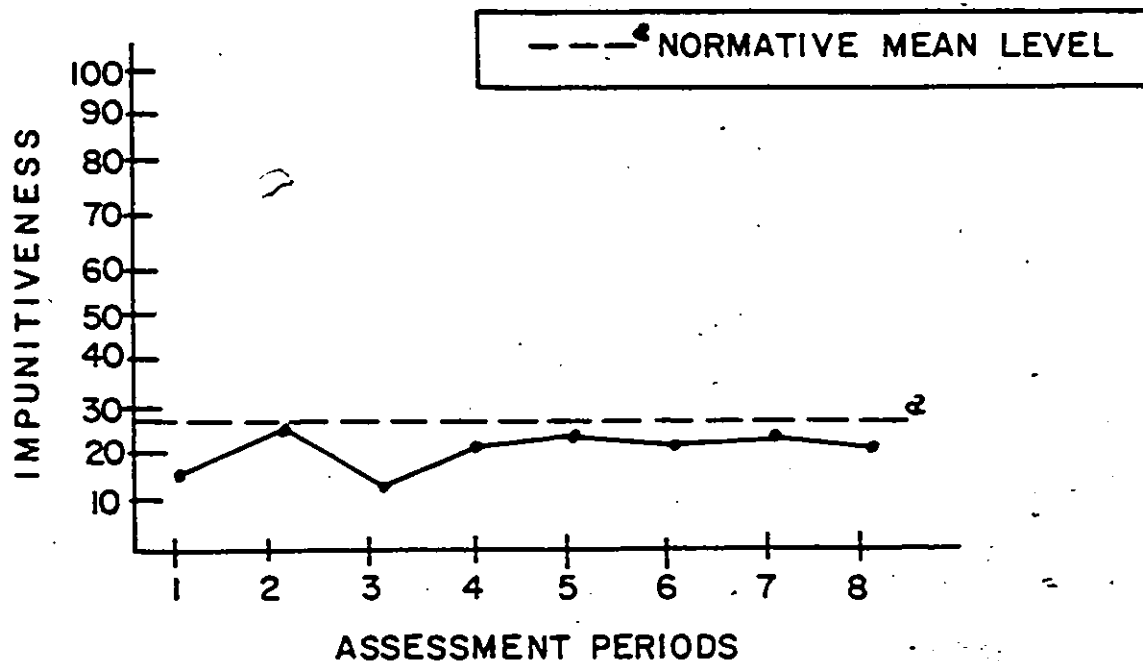
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 69 DARRYL'S INTROPUNITIVE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

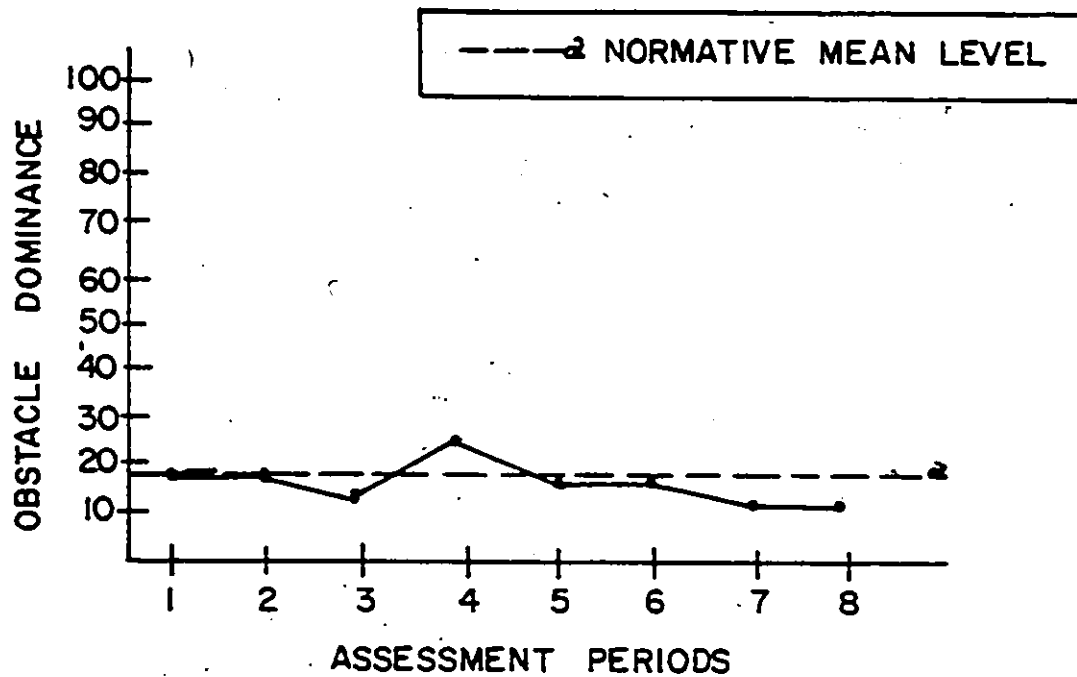
FIGURE 70 DARRYL'S IMPUNITIVE ROSENZWEIG SCORES.

As can be seen by figures 68 through 73, Darryl's aggression scores exhibited only minimal variation, concurrent with the remedial period. The only clear trend was that of stability. For this reason, this third specific research expectation could not be supported.

The child's personality traits and dynamic organization

Six of Darryl's CPQ scores exhibited change concurrent with the intervention period; scale C reversed a downward baseline trend, rising to above the average sten range; scale E reversed an upward baseline trend, falling to just above an average sten score; scale F rose from a low average sten level to a low average sten level; scale J reversed an upward baseline trend falling to a below average level; and scale Q3 reversed a downward baseline trend, rising to a high average score (see table).

The fall in two of these scores, factor E (submissiveness vs. dominance) and factor J (zeppia vs. coasthenia) appears to reflect a more socialized stance on Darryl's part. The high score of factor E during the baseline period, suggests an aggressiveness by Darryl, to the point of being a behavior problem. This high score is corroborated by earlier presented teacher ratings, which showed Darryl as overly aggressive in his peer relationships. The fall in this score is indicative of a more accomodating attitude on his part. This is in accordance with the fall in Factor J, suggestive of more group oriented behavior. The rise in factor F (desurgency vs. surgency) over the remedial period, indicates that Darryl's overall attitude appears to have improved. The authors relate the surgent attitude to be a major variable in an outgoing, extraverted approach



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

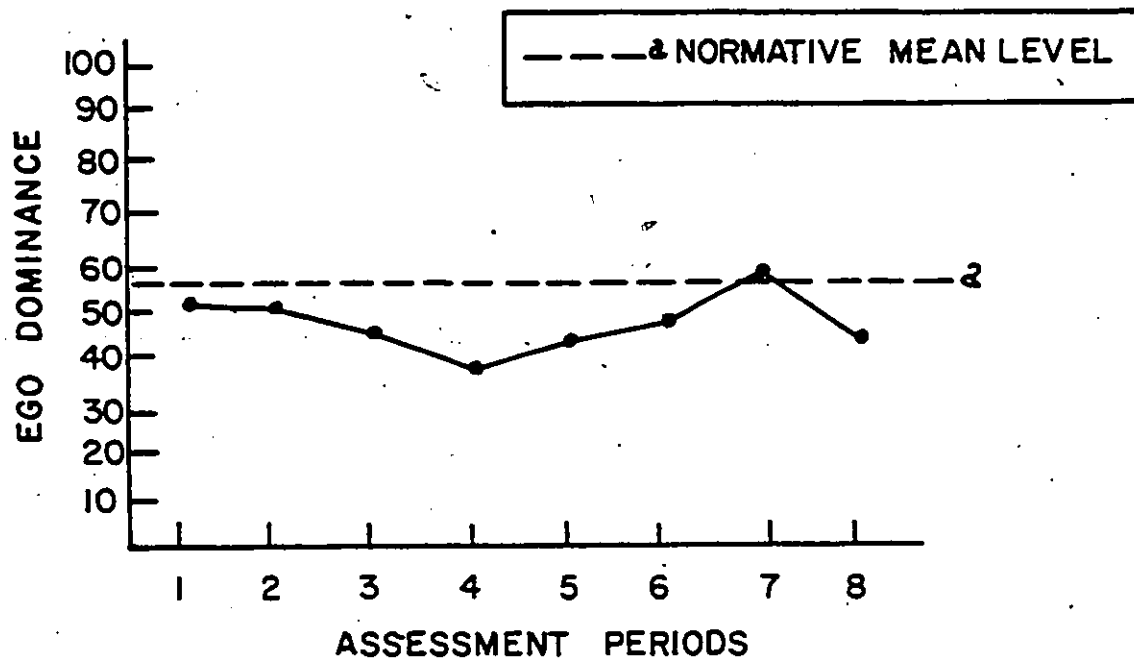
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW-UP PERIOD

8 FEBRUARY 1977

FIGURE 71 DARRYL'S OBSTACLE DOMINANCE ROSENZWEIG SCORES.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 APRIL 1976

4 JUNE 1976

5 AUGUST 1976

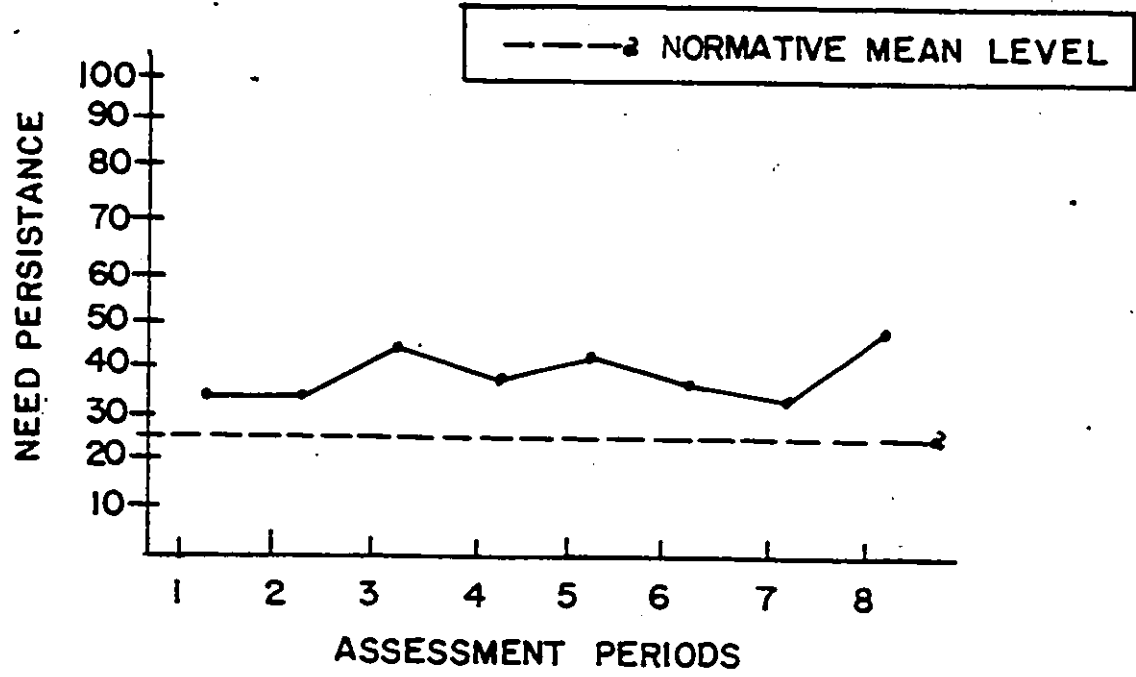
6 OCTOBER 1976

7 DECEMBER 1976

FOLLOW UP PERIOD

8 FEBRUARY 1976

FIGURE 72 DARRYL'S EGO DOMINANCE ROSENZWEIG SCORES.



KEY

- BASELINE PERIOD
 - 1 DECEMBER 1975
 - 2 FEBRUARY 1976
- APP REMEDIAL PERIOD
 - 3 APRIL 1976
 - 4 JUNE 1976
 - 5 AUGUST 1976
 - 6 OCTOBER 1976
 - 7 DECEMBER 1976
- FOLLOW-UP PERIOD
 - 8 FEBRUARY 1976

FIGURE 73 DARRYL'S NEED PERSISTENCE ROSENZWEIG SCORES.

Table # 24

Darryl's Rosenzweig Responses										
Scale	Assessment Periods								Read	Norm
	1	2	3	4	5	6	7	8		
Total Percentage Scores										
Direction of Aggression										
E*	58	54	63	63	54	58	50	50	54.9	46
I*	25	21	25	17	21	21	25	29	20	25.6
M*	17	25	13	21	25	21	25	21	26.2	28.5
Focus of Aggression										
OD*	17	17	13	25	17	17	13	13	15.4	16.3
ED*	50	50	46	38	42	46	54	42	60.8	56.4
NP*	33	33	42	38	42	38	33	46	24.7	27.2
Broken Down Response Patterns										
Direction of Aggression										
E										
A-C*	7	7	9	9	8	8	7	6	6.3	5.9
C-C*	7	6	7	7	5	6	5	6	7.3	6.9
I										
A-C	4	4	4	2	3	3	4	5	3.8	4.3
C-C*	2	1	2	2	2	2	2	2	1.8	1.7
M										
A-C	4	4	2	4	4	4	4	4	4.0	3.7
C-C	0	2	1	1	2	1	2	1	2.7	3.3
Focus of Aggression										
OD										
A-C	4	4	3	6	4	4	3	3	2.3	2.2
C-C	0	0	0	0	0	0	0	0	1.9	1.8
ED										
A-C	5	5	5	2	3	5	5	4	7.4	5.2
C-C	7	7	6	7	7	6	8	6	7.7	7.0
NP										
A-C	6	6	7	7	8	6	7	8	4.4	5.0
C-C	2	2	3	2	2	3	1	3	2.3	3.1

Reading disability norms taken from Spache, 1957.

Normative scores taken from Spache, 1957.

E* - Extrapunitiveness
 I* - Intropunitiveness
 M* - Impunitiveness
 OD* - Obstacle-Dominance
 ED* - Ego-Dominance
 NP* - Need-Persistence

A-C* Adult-Child
 C-C* Child-Child

Assessment Periods

Baseline Period

1-December 1975

2-December 1976

APP Remedial Period

3-April 1976

4-June 1976

5-August 1976

6-October 1976

7-December 1976

Followup Period

8-February 1977

to the environment. The changes in these three traits on the CPQ are supported by many results of the previous testings. On the SEI, Darryl saw himself becoming more comfortable in his peer relations.

Both the rise in factors C (emotional instability vs. higher ego strength) and factor Q3 (low self sentiment integration vs. high strength of self sentiment), are indicative of a very positive change in Darryl's measured personality traits. The higher sten score in ego strength reflects a maturity in dynamic integration and internalized control. This change appears to fit in well with the rise in Q3, and indicates a higher degree of self integration. In general behavioral terms, this rise is reflective of Darryl's behavior being directed from a more stable concept of himself and his potentials.

Figure 74, which represents Darryl's Developmental Rorschach Rating Scale cognitive index, rose by a small degree during the baseline period, to just below the normative mean level. For the entire intervention period, and into the followup period, this index varied only minimally, remaining around the mean level.

Darryl's affective index remained relatively stable during the baseline period, showing only a minimal upward trend (see figure 75). This score fell markedly over the remediation and followup periods, reaching to just below the normative mean level.

After rising moderately over the baseline period to a moderate degree above the normative mean level, Darryl's personalization index exhibited only a minimal dip over the remedial period, eventually finishing the intervention only slightly above where it began (see figure 76). This score then fell by a moderate degree

Table # 25

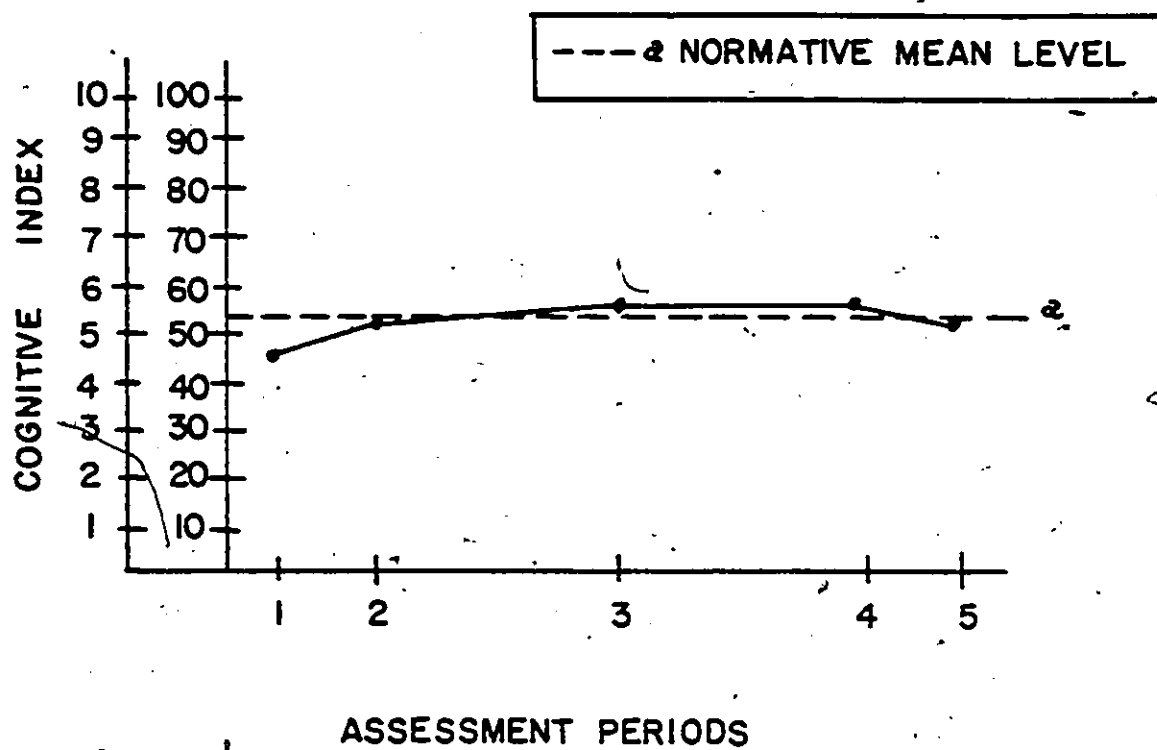
Darryl's CPQ Results for the Baseline
APP Remedial and Follow-up Periods

Trait	Assessment Periods				
	Baseline		APP Remediation		Follow-up
	12/75	2/76	7/76	12/76	2/77
Primary Source Traits					
A	3	6	6	7	8
C	6	5	7	7	9
D	6	6	7	5	7
E	8	9	7	7	9
F	5	5	8	8	7
G	4	3	4	3	6
H	6	6	5	5	6
I	2	4	3	4	4
J	6	7	4	4	5
N	5	5	4	5	7
O	5	5	6	5	5
Q3	4	3	4	6	3
Q4	5	5	6	5	6
Second Order Factors					
Extraversion	5.4	6.2	6.3	6.3	7.0
Anxiety	5.6	5.9	6.2	6.7	5.6
Tough Poise	7.4	6.7	6.3	5.8	6.0
Independance	5.8	6.0	5.8	5.7	6.0

All trait scores are listed in sten scores.

Average sten scores for all primary source traits are 5 and 6.

Mean score of second order factors are 5.5, S.D. - 2.0.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

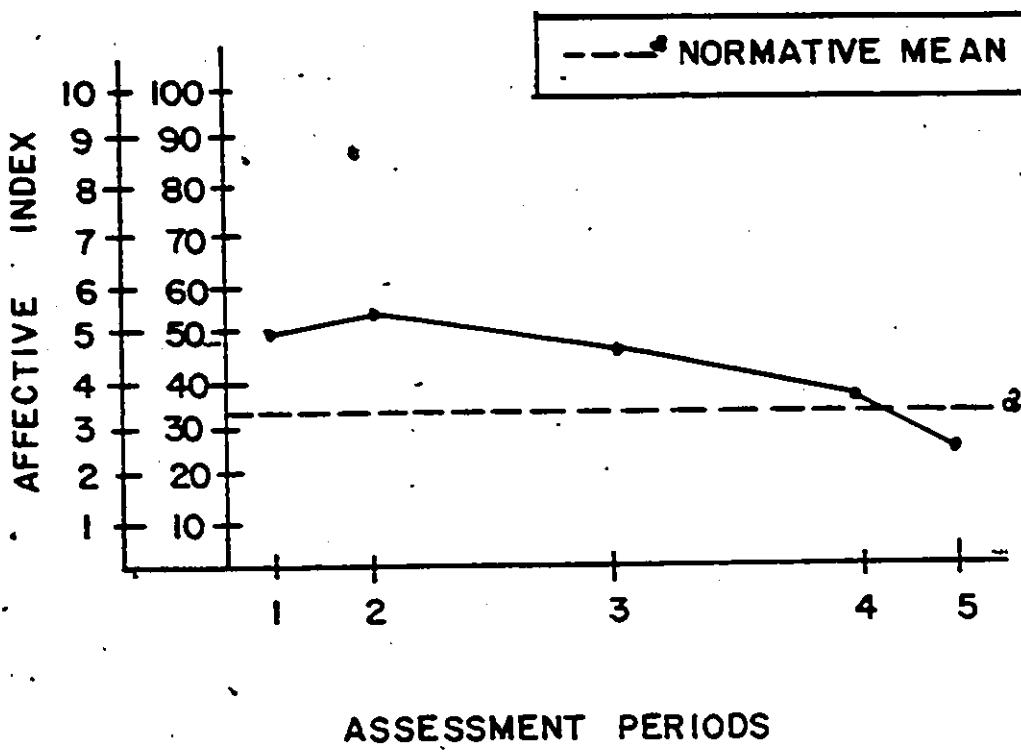
3 JULY 1976

4 DECEMBER 1976

FOLLOW-UP PERIOD

5 FEBRUARY 1977

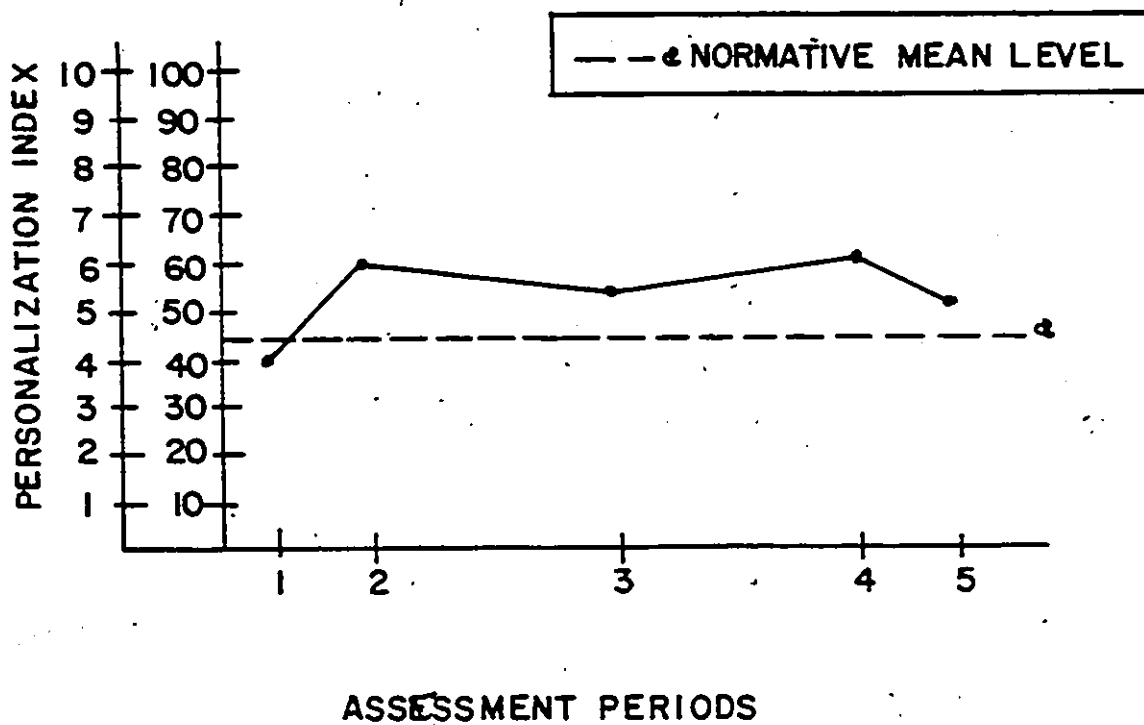
FIGURE 74: DARRYL'S R.R.S. COGNITIVE INDEX.



KEY

- BASELINE PERIOD**
 - 1 DECEMBER 1975
 - 2 FEBRUARY 1976
- APP REMEDIAL PERIOD**
 - 3 JULY 1976
 - 4 DECEMBER 1976
- FOLLOW-UP PERIOD**
 - 5 FEBRUARY 1977

FIGURE 75 DARRYL'S R.R.S. AFFECTIVE INDEX.



KEY

BASELINE PERIOD

1 DECEMBER 1975

2 FEBRUARY 1976

APP REMEDIAL PERIOD

3 JULY 1976

4 DECEMBER 1976

FOLLOW-UP PERIOD

5 FEBRUARY 1977

FIGURE 76 DARRYL'S R.R.S. PERSONALIZATION INDEX.

over the followup period, ending the study just above the normative mean level.

The fourth specific research expectation postulates that there would be a change in Darryl's underlying dynamic personality organization during the remedial period. This would be evidenced across his cognitive and affective integration as well as his personalization level.

Darryl's cognitive index rose during the baseline period and continued a gradual but minimal rise across the intervention period (see table 27). This rise was seen across all four subscales of this index, since they all were at slightly higher levels after the remedial period than before it. All of these subscales, except the quality of whole responses (scale 1) fell somewhat during the followup period. In reviewing his quantitative location scores, Darryl's W% was the only score to show a consistent change concurrent with the intervention period, reversing a downward baseline trend (see table). The increasing number of whole responses, coupled with their improving quality are both signs of an increasing ability on Darryl's part for perceptual abstraction.

Darryl's affective index rose slightly during the baseline period, but then fell over the entire remedial process, then into the followup period. Partly responsible for this decline was the fall in the number of FC responses over this period (see table). The usual interpretation of color impact on the Rorschach is that it represents the child's affective reactivity towards his environment. Although a lack of responses is usually not interpreted in a negative sense, the fall in this index over the remedial period, at

Table #26

Darryl's Rorschach Responses

	Assessment Periods				
	Baseline Period		Remedial Period		Follow-up
	12/75	2/76	7/76	12/76	2/77
Total R	39	36	27	28	26
Location Scores					
W%	10	6	7	13	12
D%	54	64	59	71	50
d%	23	26	19	5	27
Dd%	10	17	15	11	12
Determinant Scores					
F%	79	61	70	58	50
M	0	2	1	5	3
FM	2	4	4	6	5
m	lmf	lmf	0	lmf	lFm, lmF, lm
FK	0	lFK, lK	lK	0	0
Fc	3	3	1	1	2
FC1	1	0	0	0	0
FC	1	3	2	1	0
CF	0	0	0	1	0
C	0	0	1	1	1
Quantitative Scores					
M:FM	0:2	2:4	1:4	5:6	3:5
Sum C	5	1.5	2.5	3	1.5
FC:CF+C	1:0	3:0	2:1	1:2	0:1
M:Sum C	0:.5	2:1.5	1:2.5	5:3	3:1.5

Table #27

Darryl's Developmental Rorschach Rating Scale Scores

Scale	Scoring Periods				
	Baseline Period		Remedial Period	Follow-up Period	
	12/75	2/76	7/76	12/76	2/77
C.I.*	4.50	5.10	5.50	5.60	5.30
A.I.*	5.00	5.20	4.70	3.50	2.50
P.I.*	4.00	5.80	2.00	6.00	5.00
A					
(1)	2.00	2.50	3.00	2.60	3.00
(2)	2.22	2.50	2.42	2.71	2.38
(3)	2.21	2.23	2.30	2.64	2.31
(4)	2.55	3.00	3.33	3.15	2.92
B					
(5)	2.00	2.67	2.67	2.00	1.00
(6)	3.00	2.00	1.00	0.00	0.00
(7)	3.00	3.00	3.00	3.00	3.00
C					
(8)	1.66	2.87	2.60	3.08	2.64
(9)	2.28	2.92	2.55	2.87	2.36

a 0 indicates no scorable responses given.

A - Cognitive Integration

- (1) Whole Responses
- (2) Part Responses
- (3) Form Level
- (4) Form-Controlled Determinants

*C.I.-Cognitive Index
 A.I.-Affective Index
 P.I.-Personalization Index

B - Affective Integration

- (5) Form-Color Integration
- (6) Form-Shading Integration
- (7) Texture Integration

C - Personalization

- (8) Quality and Balance of Movement
- (9) Quality and Balance of Movement, Shading and Color

best, can be seen as an accommodation period for Darryl. The fall in form controlled color can be viewed as a lessening of Darryl's ability to control his emotional responsiveness and a rise in his spontaneity.

It should be pointed out though, that this index, for the majority of the study, remained above the normative mean for his age. It is in fact surprising that Darryl's affective integration was at such a high qualitative level during the baseline period, considering the results of the other measures during this period. The other measures do not suggest that over the remedial period Darryl was becoming more impulsive, just the opposite, the behavioral ratings suggest he was changing from an emotionally labile child who tended to either withdraw or strike out aggressively, to a more socially mature one. Seen in this light, the fall in his affective index could be viewed as a re-organization process of his autocentric perceptual attitudes, from a rigid overly controlled, and thereby labile one, to a more spontaneous relaxed pattern.

The above hypothesis is somewhat confirmed by the results of Darryl's personalization index. This score rose moderately over the baseline period, and after falling off by mid-re-education, rose to a slightly higher level by the end of APP. The rise in this index by the end of the remedial period was partially achieved because of a better balance between Darryl's human and animal movement responses (see table). Although his M:FM ratio was weighted in favor of FM for the entire study, at the end of the remedial period, this score stood at its most favorable relationship, 5:6. This ratio reflects Darryl's level of maturity, in the sense that it relates to the

strength of Darryl's inner resources with respect to his impulse life. Developmentally, Ames et. al. (1974), report a 1:1 ratio by age 10 in this relationship. Although Darryl's ratio did not quite reach this plateau, the 5:6 ratio achieved represents a substantive improvement in the 1:2 ratio before intervention. Although no statistical correlation exists, this increased level of inner impulse resources was reflected as well in CPQ traits C and Q3.

The variability in Darryl's personalization index over the baseline period was confirmed by other measures during the same period. Both Darryl's mood and his reactions to others were quite labile. Although some of this remained by the followup period, its variation appeared less extreme.

In summary, Darryl's underlying dynamics showed some strong signs of a growing maturity. It also showed some persistent signs of variability, as well as a reorganization process in his affective integration. With this in mind, the final research expectation can only be partially supported.

Summary of Psycho-Social Results

During the baseline period, the picture of Darryl's psycho-social/personality organization generally reflects an affect laden, yet fairly unsocialized child. He showed many signs of warmth and affective responsiveness, but this quickly could be turned into quite aggressive reactions. His mood swings were also quite severe, with a euphoric attitude quickly changing into a moody, sulking posture. This more labile, somewhat diffuse organization was also evidenced in Darryl's distractability. He had a lot of difficulty directing his energy, even in conversation. He had major difficulty

in an academic setting where his mind wandered and he became distracting both to himself and others.

A major change in Darryl, as measured by the instruments used in this study, could be viewed as a maturation process and a breaking in his egocentric behavior pattern. Across a number of psycho-social/personality levels, there was a noticed decrease in Darryl's aggressive, unsocialized patterns and reactions. As he became less self centered, his reactions gradually became more group syntonic and more acceptable to others within his milieu. This internalization and articulation of his behavior was alluded to across a number of measures. The improvement in his behavior was noticed by Darryl as well. His social self esteem showed the most positive gains over the remedial period. In addition to an increasing socialization level, concurrent with the remedial process, a positive change was seen in Darryl's mood swings, bringing increased stability. With this change, Darryl was better able to effectively utilize the energy he possessed and he was seen as being better able to focus this energy in task oriented behavior. His Rorschach protocol points to an increasing ability on Darryl's part for more abstract thought.

Ratings on the CBRS and SEI, suggested that there was not much improvement in Darryl's self confidence or general esteem level. In contrast, CPQ scores pointed to a higher level of self integration. Whereas no overt change was evidenced in his esteem levels, there was obviously a higher amount of structural differentiation taking place.

Darryl's Rorschach protocols suggest that concurrent with the APP Remediation period, there was a somewhat regressive, restructuring impact on his affective integration. One can assume that a breaking down in his egocentric organization toward a more realistic, age appropriate state of individuation would entail a reorganization of affective perceptions.

Summary of Research Findings

How the child is seen by significant others

The first research expectation hypothesized that concurrent with the APP remediation there would be a positive change in the way significant others view the child.

Four out of the five children who participated in this study, were rated by their teacher, below the normative range in social adjustment, during the baseline period. Each one of these children had major difficulty in their interpersonal behavior skills. During the baseline period, they all lacked peer status, and all tended to remain on the perimeter of their peer groupings. Three of the children in this study, Ernest, Charles and Darryl, fit well into Stott's (1971) inconsequential child category, during the baseline period. They were all egocentric, coming across as selfish and self-centered and mostly rejected because of these reactions. Andrew, on the other hand, was seen more as an unforthcoming child, (Stott, 1971). He was extremely immature and anxious in his interactions. All four of these children during the baseline period were seen as having a clear deficit in social perception. They were all poor in judging the moods and attitudes of others which led to inappropriate behaviors. Brian, on the other hand, was rated by teachers within

the average adjustment range during the baseline period, and was seen as more mature, not exhibiting many of the inappropriate behaviors of the other children.

All four of the children rated below the average range in social adjustment during the baseline period, had reached this range by the followup period, with three of the four reaching this level by the end of the remedial period (assessment period 7). Concurrent with the remedial period, the degree of improvement in socialization skill, varied with each child, with Brian being the only child that his teacher did not see a noticeable gain. The over aggressive behaviors of Ernest, Charles, and Darryl was diminished following the intervention period. Across many of the instruments used to measure change in this study, Darryl showed more group oriented behavior, less self centered reactions and a marked decrease in overt aggression. Ernest's improvement also was seen across many levels, as it appeared he was better able to judge and evaluate the effectiveness of his reactions. He was also seen as gaining in peer status and his social responsiveness and group oriented behavior also improved. Charles also was seen as gaining in social awareness, which appeared to lead to a higher group status. But also in his case, signs of egocentricity and impulsive behavior remained.

Andrew also showed definite improvement in his socialization skill, but it was of a slightly different nature than the above three children. He was viewed as more genuine in his interaction and more willing to interact with both peers and adults. Mostly, Andrew was seen as more independent and more practical. Brian,

although he was seen after the intervention period as less socially naive, did not appear to show any improvement within his peer group relations. Although it could be argued that Brian was more age appropriate to begin with, his lack of improvement across many psycho-social/personality and academic areas. According to academic criteria, the APP remedial program was less successful in Brian's case than it was with any of the other four children. In short summary, teachers rated the four children who showed at least moderate academic success during remediation as also making social progress. Although the relationship between social facility and academic efficiency does not appear strictly linear, an improvement in one appeared to be reflected by an improvement in the other.

Four out of the five children in this study (save Brian), began the baseline period below the average self adjustment range, as rated by their teacher.

Teachers felt that all of these children exhibited a generalized fear of interaction. During the baseline period, all of the children except Brian, were seen by teachers as either somber and unhappy or extremely moody.

Concurrent with the remedial period, teachers saw major changes in the self adjustment levels in four out of the five children. Ernest exhibited more self confidence and more maturity in his emotional control. Andrew showed less overt signs of anxiety and fear, appearing much happier and easy going. Charles also showed more self confidence and less fear, although he still showed periodic negative and defiant behaviors. Darryl also showed major improvement in self adjustment over the remedial period, and

although he remained a sensitive child still prone to sulk when things did not go his way, there was a strong improvement in his overall responsibility level.

Similar to his social adjustment ratings, Brian's teacher did not notice a change in his self adjustment concurrent with the remedial process. It is interesting to note, that by assessment period 7, all five of the children's self adjustment ratings were within the average adjustment range, and this remained such over the followup period. The improvement in the self adjustment of the majority of the children in the study, for the most part, was mirrored by the Inferred Self Concept scale as well.

Parental-residential ratings of the five boys did not mirror the change in self and social adjustment noticed by teachers. On both of these subscales, these ratings were much higher than teacher scores during baseline.

For the social adjustment scale, four out of the five boys were rated within the average range during the baseline period. The fifth boy (Ernest) was rated slightly below the average range. In general, only one of the five boys exhibited any real change concurrent with APP (Charles' now rose from a low to a high average).

All five boys were rated by parental-residential raters within the average self adjustment range during the baseline period. During APP, two boys (Brian and Charles) exhibited a slight rise in this rating, two boys' score fell slightly (Ernest and Andrew) and one remained approximately the same.

As with the teacher rated social and self adjustment scales, the teacher rated school adjustment scales showed excellent positive change in four of the five boys (save Brian) concurrent with APP. During the baseline period, these four boys all exhibited signs of an attention deficit with varying symptomatology. Ernest had great difficulty with his motivation, while Andrew would spend a good deal of time distracting other students. Charles had difficulty keeping his mind on his work while Darryl also showed this problem coupled with an inability to sit still.

All four of these boys showed a major upward change concurrent with APP. Two of their scores reached to within average levels while two ended slightly below this. Interestingly the major difference in these positive changes was that the two boys (Charles and Darryl) whose scores fell below average levels still showed some signs of attentional and concentration difficulty.

Brian's school adjustment rating began the baseline period already within the average range and rose concurrently with APP to well above this level. But this decayed very quickly after termination indicative of no real change.

How the Child Views Himself

The major conclusion that is possible from the results of the SEI scores is that all five of the children exhibited extreme variability in their ratings over every phase of this study. The majority of the scales did not exhibit baseline stability in all but one child (Charles). In his case three of the five scales remained stable during the baseline period. All three of these scales then rose concurrent with the APP remediation.

Out of the five scales in this inventory, the largest amount of variability appeared to occur across the social self-esteem scale. It was quite variable across all five boys.

When teacher rated social adjustment results are compared to the child's ratings of his social self esteem levels, on the SEI, some interesting comparisons arise. Although these two measures have never been statistically correlated, by using the interval scale for both and the average ranges for both, some preliminary comparisons can be made. First, when comparing baseline periods (at assessment period 1), all of the children's social self esteem ratings (save Charles), were higher than their teacher adjustment ratings (Charles was approximately the same). So, four out of the five children considered themselves more successful in their social facility than their teachers did at this time. At the end of the study, three of the children's ratings (Ernest, Andrew and Brian) of their social self esteem's, were much closer to teacher ratings of their adjustment. The remaining two children both showed higher ratings than their teachers. In the majority of the children then, their social self esteem ratings were closer to the more objective ratings after the remedial period than before.

The child's rating of his own self esteem levels proved an interesting comparative point, to the more objective CBRS. Some trends were quite evident across all the children's SEI ratings. First, all of the children, except Charles, rated both their general and total self esteem level, above the normative mean during the baseline period. This is an interesting contrast to teacher ratings and is more in line with parental views.

Another interesting aspect of the children's SEI ratings was the relative variability all the scales exhibited concurrent with the remediation. This could indicate the relative instability of the testing instrument, but considering past findings of the SEI, it seems more logical that it is reflective of the instability of the child's own feelings of self worth.

How the child handles frustration-aggression

During the baseline period, a number of patterns emerged in the children's direction of aggression scores (E, I, and M), on the Rosenzweig. During this period, two children (Darryl and Ernest) showed higher E scores than normative levels, with I and M remaining around the mean level. In behavioral terminology, these children showed more anger directed at their milieu, when confronted with conflict situations. Over the remedial period, and into the followup, these patterns showed only minimal variation. The other three children (Brian, Andrew and Charles), showed a different pattern during baseline, with low E, low I, and high M. This is a more passive, glossing over, even a withdrawing pattern in comparison to the norm. After the intervention period (assessment period 7), the patterns of two out of these three children changed (Brian and Andrew). Over this period, E showed a substantial rise and M a substantial drop. Neither of these pattern changes in either Brian or Andrew exhibited any permanence, as these trends reversed this direction during the followup period.

When comparing pre to post remedial periods, little change was seen in three of the children's focus of aggression scores (OD, ED and NP). It is of interest, that the children with whom the change

occurred, were those two which showed direction of aggression score changes, Andrew and Brian. But whereas in both cases their OD score rose, their other two scores varied opposite each other. In Brian's case, his defensiveness about his part in the frustrating event fell (ED), while his solution seeking behavior (NP) rose.

Returning briefly to the previously stated results, it is of import to note that whereas improvements in socialization skill was observed by teachers, this was not, for the most part, translated into strong conceptual response pattern changes on the Rosenzweig.

The child's personality organization

The fourth research expectation postulated that there would be a positive change in the child's underlying personality organization concurrent with the remedial process.

Results from the CPQ tend to confirm the idiosyncratic nature of personality organization. The changes in the personality traits concurrent with APP varied differently with each child, with no overall pattern emerging.

Ernest's CPQ tended to support other measures showing him better able to channel his energy as well as a general maturing in his social attitude (i.e., social responsiveness, group orientation, overall responsibility). His CPQ also showed an objectification in his self system as well as a rise in ego strength. Andrew's CPQ showed him to have a more positive attitude but also reflected a rise in his ergic tension level. Results also pointed to an increase in his field independence traits.

Brian's CPQ results were quite interesting reflecting more of a physiological maturation. He was less extreme in his reactions

(i.e., more physical energy, less reactive and more reflective). But results also showed his self sentiment integration falling as well.

As with Ernest, Charles' CPQ results reflected an energizing effect of APP coupled with a reduction of his overall tension level. Darryl's CPQ score tended to support many of the conclusions reached from the CBRS. It showed a substantial reduction in many of his undersocialized reaction patterns, as well as an improvement in his group oriented behavior.

As mentioned above, a definite improvement was seen by teachers in the majority of the children's social perception which in most instances represented an objectification of the perceptual process. This was directly reflected in an increase in behavioral maturity. In this regard, a concurrent improvement should have been evidenced in the child's personalization index. All five of the children's personalization indices improved over the course of remediation, albeit some by small margins (Andrew, 2.3; Ernest, .6; Charles, .3; Darryl, .2; and Brian, 1). Owing to the nature of the instrument, one would not expect the type of dramatic change on the Rorschach, that was seen on the CBRS. So although the change in the children's social adjustment was mirrored by a dynamic change in the structuring of his experience, these two measures are not quantitatively comparable. It is interesting to note that the child who exhibited the strongest academic and social adjustment gains (Andrew), exhibited the strongest gains on the personalization index; and the child who exhibited the weakest academic and social

adjustment gains (Brian) exhibited the weakest gains on the personalization index.

There appears to be no general trend on the affective index on the Rorschach Rating Scale across all five of the children. This index appeared the least stable of the Rorschach scores, exhibiting wide fluctuations between assessment periods. Even in regards to the individual children, trends in this score were somewhat incongruent with other testing results. Results here point to the persistent lability of the dyslexic child's affective organization, and to the questionable connection this score has to improvement in reading skill.

For the cognitive index of the Rorschach Rating Scale three of the boys showed a positive improvement concurrent with APP (Ernest, Brian and Darryl) but in two instances this was also reflected in baseline trend. Andrew's CI showed no specific change and Charles' was unstable.

CHAPTER IV

Discussion of Results

This discussion section will focus on two broad areas in regard to pertinent results found in this study. The first section will address both the four specific research expectations, as well as other clinically oriented areas that proved of interest. This section will be called clinical impressions and will encompass the following subsections: Research expectations, Theoretical implications, and the Tomatis Technique.

The second section in this chapter will focus on the strengths and weaknesses of this current research. It will be subdivided as follows: Design and methodology, instrumentality, and the Tomatis Technique.

Research Expectations

The first research expectation hypothesized that, concurrent with the APP remediation there would be a positive change in the way significant others view the child.

Both the child's social facility and self adjustment were rated by his teacher and his parents. During the baseline period, four out of the five boys were rated by their teachers below the average range in social adjustment. By the end of the remedial period three out of the four ratings had risen to within average range. The fourth reached this level by the end of the followup period. For the fifth boy in the study, the teacher did not see any noticeable gain in this area. It is of interest to note that this

boy did not show any academic remedial effects either. Results here generally support this first research expectation.

As far back as the mid 1940's, it was observed that children with learning problems exhibited many forms of maladaptive or immature social behavior (Jackson, 1944). More recently, the excellent observational studies of Bryan and her associates (Bryan-Wheeler, 1974; Bryan, 1974, 1974a) have confirmed the difficulties these children exhibit in social intercourse. The critical point alluded to throughout the literature is that these children exhibit generally immature social styles and are unable to benefit from the subtleties or nuances of interpersonal interaction (Briuninks, 1978; Wiig and Semel, 1976). Tomatis (1978) has termed this occurrence, the inability of the dyslexic child to decode his environment. Stott (1971) has identified two core syndromes for children with educational problems. The first he termed the unforthcoming child, who is submissive and immobilized by fear and anxiety. This child is very cautious, rarely venturing into any undertaking he's unsure of. The second child he termed the inconsequential child, who doesn't check back on his behavior but acts impulsively, and at times, aggressively. During the baseline period three out of the five children fit into Stott's inconsequential category (Ernest, Charles and Darryl) and one (Andrew) fit well in his unforthcoming group. These four children were all seen by teachers as having major difficulty within the social realm. All four of these children, during the baseline period, were seen as having a clear deficit in social perception. In line with Lerner's (1976) thinking, they were all poor in judging the moods and attitudes of others which led to

inappropriate behaviors. In this regard then, these results clearly fit and confirm trends in the literature.

As mentioned, teachers noticed that change in these four children was quite strong during APP remediation. In general, their improvement tended to center around two areas; social awareness and social responsiveness. These improvements led to higher peer status and more acceptance by peer group. These changes mirrored what teachers saw as a generalized reduction of egocentricity or a maturing in their interaction patterns.

The major finding here, that the four boys who showed at least moderate academic gain also showed social gains, requires some theoretical clarification. Tomatis (1978) has speculated that the underlying social difficulty for the dyslexic child is his refusal to part with the more secure mother-child communication dyad. This protracted dependency relationship leaves him unable to successfully adapt to his surrounding environment. Whether the child remains immobilized and overly cautious (Stott-unforthcoming) or impulsive and aggressive (Stott-inconsequential), both reflect social immaturity. Athey's (1966) theorizing and research support this position. She found that dyslexic children tended to depend too heavily upon their parents for support and direction. They also lacked autonomy and went out of their way to please mother. Although Athey defined this syndrome within an Ericksonian model, her conclusion supports Tomatis, that a breakdown in the socialization process for the child has taken place. The developmental difficulty here centers around what Mahler (1968) has termed the separation-individuation process. Ausubel (Ausubel and

Sullivan, 1970) has called this same process desatellization. But whatever this developmental sequence is called, it is marked in the normal child by an internalization of function; a social distantiation (Werner 1963, Ausubel and Sullivan, 1970) between love object and child. This change is marked by a reduction of the child's egocentric attitude and a heightening in his social awareness and responsiveness. The developmental shift from egocentrism to a more relativistic behavioral attitude assumes a mediational process and an ability of the child to gauge his reaction against those of others. Results here suggest that these four boys showed a dramatic maturing in their social interaction pattern, implying at least the beginnings of the individuation process. Tomatis (1978) has maintained that the tie between reading, language and social maturity is a strong one. That because the APP remedial program helps teach the child self listening skills, this will lead to an internalized awareness of one's capacity to act upon one's environment. He hypothesizes that the ability of the child to control his linguistic skill reflects his degree of social differentiation. The shift that Tomatis maintains must take place is toward a more allocentric form of communication. The child breaks out of the "me-we" attitude and assumes the more altruistic "I-thou" one. This change in psycho-social functioning was seen in the majority of the boys in this study and was found across many of the measures. Research also ties positive social interaction patterns with self concept (Hartup, 1970). It would be expected then that teacher rated self adjustment areas should mirror this social change.

On both scales used, teacher ratings of the child's self adjustment and self concept exhibited major improvement in four out of the five boys measured. The child that exhibited no change (Brian) is the same that showed no social adjustment change. On the CBRS, these four children all began the study below the average self adjustment range. All of these children fit well into Bryan's conceptualization of being fragile, emotionally vulnerable and easily defeated. Teachers rated major changes in all four of the children concurrent with the remedial period. These results also generally support this first research expectation.

Research has shown a strong tie between the child's academic success and his self concept (Glasser, 1969; Silberman, 1970; Henderson and Long, 1966). It has been postulated that one of the reasons the dyslexic child might become a rejected member of his peer group, is that he is seen as scared, unhappy and worried (Bryan, 1974). While other children's opinion of themselves rise with increased competence and age, the reading disabled child's self concept remains relatively stable (Glick, 1972). Baseline results here generally confirm literature trends as well. These four boys showed: anxiety and fear at interaction (Koppitz, 1971); poor self confidence (Athey, 1966); defiance (Keogh and Tchir, 1972); and generally unhappy appearance (Banreti-Fuchs, 1978). Results here are strong, indicating that concurrent with improvement in academic and social skill, teachers noticed an improvement in self adjustment. The connection between improvement in self adjustment mirroring improvement in social adjustment is a theoretically sound one. The child's self develops by integrating experiences with

subjective realities (Lecky, 1945). An integrated self system is one in which environmental integrations are consistent with experience. With the dyslexic child's inability to decode his environment, an integrated self system remains impossible. The child's feelings of competence arise out of his capacity to interact effectively with his environment (White, 1959). The improvement in the child's social competence should mirror his improving self image, and results here suggest this occurred.

Freud (1961) was one of the first to suggest that pathology arises when the demands of the environment differ substantially from internal need states. Sullivan (1953) felt this would result in a dissonance the child could not accept, and would lead to his selectively not attending to certain areas of his environment. In terms more familiar to Tomatis' theoretical position, the communication of the child becomes distorted. It is expressed by a non-acceptance of the outside world, accompanied by a "progressive extinction of the will to mature or exist independently" (Tomatis, 1978, p.50). Rogers (1973) has called this state one in which the child becomes estranged from himself.

Parental-residential ratings of both the child's social and self adjustment are quite different than teacher ratings. First, in both areas, parents rated children much higher than teachers during baseline. All social adjustment ratings by parents were within average ratings during baseline, except Ernest, and his were minimally below that level. All five of the boys were rated within the average range during the baseline in self adjustment. Second, in both adjustment areas, parental-residential ratings did not

exhibit any major changes concurrent with APP. In this regard, these results suggest a rejection of the first research expectation. Parents did not see a positive change in their children concurrent with APP.

This result is quite different from those reported in the literature. Studies have suggested that parents of learning disabled children tend to devalue their abilities, and use derogatory terms as descriptors (Seigler and Gyntler, 1960), (Chapman and Boersma, 1979). Studies have also suggested though, that the reading disability might reflect a maladaptive home environment (Thayer, 1970).

The discrepancy between social adjustment ratings of teacher and parent is of major consequence for these children. The literature is especially weak in comparing the varying expectancy levels between the dyslexic child's home and school environment. The school's normative expectation levels might in fact be quite different from those at home, especially if the home environment showed signs of social maladaptation. The academic environment is also the area where the child has met only partial success.

In any case, results here do not support the general assumption that the parents view the child in a negative light. Further than this though, it is evident from these results, that for both self and social adjustment ratings, the two most significant adults in the child's life differ in their view of him. This was true both prior to and during the APP process.

The second research expectation hypothesizes that concurrent with the APP the child would feel more positively about himself.

Results obtained here do not support this hypothesized change. In general, the boys in this study showed aggrandized scores during the baseline period. These levels showed little stability of level or trend during the course of the study.

The child's rating of his own self esteem levels prove an interesting comparative point to the more objective teacher rating. During the baseline period, four of the five children rated their social self higher than their teacher adjustment ratings (Charles was approximately the same). At this period then, four out of the five children considered themselves more successful in their social facility than their teachers did. By the end of the study, three had fallen to more approximate teacher rating. The literature corroborates that the learning disabled child has difficulty in the assessment of his social status in relation to others (Wiig and Semel, 1976), and that they tend to rate themselves higher in status than others do. It is also interesting to note, that on the SEI ratings, all five children saw their social esteem rating fall during the baseline period, and that over the course of the entire study, these ratings were in general, extremely variable. The lability in these felt perceptions was quite dramatic. It has been suggested in the literature that children's perceptions, which are grossly overrated, also tend to be the least stable over time (Kugle and Clements, 1980).

The discrepancy between teacher and child rating of their social facility, is of large consequence for these children. The literature suggests that not only is the teacher a highly accurate rater of such development (Lambert, 1977; McMichael, 1980), but that

the child's eventful return to a more normalized setting can be more dependent on his behavior and attitude than his actual achievement (Koppitz, 1971).

Four of the children rated both their general and total self-esteem levels above the normative mean during baseline. This is in direct conflict to teacher opinion and is closer to parental views. Festinger's (1954) theory of social comparison suggests that people will use significant others in their milieu as the basis of forming their self worth. In this study, parents' ratings were closer to children's than teachers were. It must also be remembered that these children were all in a special school setting and two were in a special residential setting. Their immediate peer reference group could lend itself to a higher evaluation in comparison. The relative strength of these boys' esteem evaluations during the baseline period, could be reflective of these unique circumstances, rather than a defense against devaluation.

This research does not substantiate the general notion that the dyslexic child has low self esteem. This study found these feelings aggrandized during baseline. The child's esteem levels were also quite labile during remediation but generally falling, more closely approximating teacher evaluations after remediation than before. So although results here do not support acceptance of this second research expectation, they do suggest an objectification of many of these boys' subjective evaluations.

Theoretical positions would suggest that the discrepancy between these children's subjective esteem ratings and their teacher rating should cause major problems. The major issue here is the

ability of the child to correctly perceive his status positions. The boys in this study appear to have been more successful at doing this in relation to parental feelings than the more objective school milieu. Results here confirm the previously stated notion that the dyslexic child has not been able to step past the home toward the more objective social milieu. The importance of the ability of the child to objectify and successfully evaluate his status in relation to others is of major developmental consequence. Tomatis (1978) has postulated that the self structure of the dyslexic child must be distorted, owing to the affective nature of the dysfunction. Because the child's social perception and judgement is distorted, he has difficulty evaluating the situational gestalts in which he finds himself (Kranick, 1976). Developmentally, the child's self consistency and objectivity develops from his interaction with his environment (Lecky, 1945, Piaget, 1964). Lecky (1945) has theorized that the important developmental crisis for the child is his ability to assimilate his father's personality. This reorganizes and enlarges his self structure. If the child does not step beyond his maternal bond, then his adaptability and learning decreases. In this case, according to Lecky, he returns to his fantasy and egocentric nature to defend his own validity. From this perspective, results here make theoretical sense. It follows that the child's perception of his status would be closer to maternal views. During the APP remedial process, Tomatis claims that the child encounters his self by interiorizing his linguistic and phonatory skills. He thereby becomes more aware of his existence as a separate entity. In this line of thinking, the re-ordering of the

child's apperception (conscious self-perception) during remediation could exhibit itself in unstable response patterns. And in fact, a lability in felt perceptions was observed on the SEI over the course of remediation. The developmental importance of the changes recorded and discussed so far is of major import. Results suggest that the majority of boys in this study have taken major steps toward an autonomous existence. Their social and self adjustment improved substantially in the eyes of their teachers. Their own apperceptions (conscious self-perception) also became more realistic and syntactic with their environment.

The third research expectation postulates that there will be a positive change in the way the boys conceptually handled frustrating experience.

During the baseline period two separate patterns emerged from these five boys. Two children (Darryl and Ernest) fit into an overly aggressive pattern, directing much of their frustrations outward toward the environment. The remaining three children fit into a more passive, almost withdrawing pattern. The passive patterns of two of these children appeared to change concurrent with APP, but neither was lasting as there was a quick return following termination.

The two differences of aggression patterns found in these five children are consistent with the literature on the subject. A number of research studies have identified learning disabled children as being at one of the extreme ends of the aggressive-passive continuum (Natchez, 1961; Feldhusen et al, 1970; Bell et al, 1972; Hake, 1969). Along this continuum, Harris (1966), found the

heavier weighting on the passive end (75%) for the learning disabled. Although this result is well supported throughout the literature, there is relatively little emphasis placed on postulating why this is true. It has been hypothesized (Abramson, et al, 1978), that individuals who feel they have no control over their fate, will respond with a state of learned helplessness. This will result in a passive approach to their environment. Although internal locus of control has been positively connected with achievement (Kifer, 1975), little has been done to trace the developmental link between learned helplessness theory and dyslexia.

In summary, this third research expectation cannot be supported. A change was not seen in the way these children conceptually handled frustrating experiences.

The fourth specific research expectation postulated that concurrent with APP there would be a positive change in the personality organization of the children. It was expected that this change would be evidenced in the cognitive, affective, and personalization organization of the child.

According to its author (Mook, 1977), the personalization index on the Rorschach Developmental Rating Scale is an indicator of the humanization development of the child; ie. the process of the child becoming distinct and separate from his surrounding milieu. This process is reflective of both the dynamic maturing of the child's inhibitory ability and the increasing differentiation and articulation his personality organization is assuming. Upward change on this measure is also reflective of the distancing process in communication between symbolizer and symbol (Werner, 1963), in

the sense that it represents an autonomizing of function. The higher the personalization index, the less egocentric and idiosyncratic is the child's perception. All five of the boys in this study saw their personalization indexes rise during APP. This result is consistent both with previously stated results, as well as the theoretical orientation stated throughout this dissertation. For this index, this fourth research expectation is supported.

As mentioned previously, the affective index on the Rorschach was quite variable for most of the boys involved in this study. No general trend was noticed, and in this regard, this result does not support the postulated direction of the expectation.

Tomatis has postulated that the first stage of APP would recreate the child's prenatal acoustic environment. Its stated purpose is to stimulate the archaic memory traces that formed the initial bond of communication between fetus and mother. One would expect from this period a regression in affective function during this stage of remediation. It is of interest to note here, during the first half of APP (which most roughly corresponds to the first stage of APP) four out of the five of the boys' affective indexes fell. Although this relationship requires closer scrutiny, preliminary results would support Tomatis' theoretical position.

The ~~Cognitive~~ Indices changed differently for each of the children. four out of the five CI's rose during the APP remediation, but two of these showed ascending baseline trends; the other two fell slightly over the followup period. Trends do appear positive enough though to warrant acceptance of this expectation with reservation.

Out of all the location scores on the Rorschach, the whole responses exhibited the greatest change concurrent with the remedial period. The quality (structural differentiation) of the whole responses improved in three out of the five children during the APP remedial period (Ernest, Brian, and Darryl). Although the quality of whole responses dropped for Charles, their total percentage in his protocol rose. In Andrew's protocol, the quality of whole responses remained fairly stable, falling slightly at the end of the remedial period, but then rising back after the followup period. Research connects the improvement in the quality of whole responses with the complex cognitive function of abstraction (Blatt and Allison, 1963), and more recently, to the developmental nature of qualitative intellectual growth (Smith, 1981).

In three of the children (Ernest, Brian and Charles), there was also a positive change in form controlled determinants concurrent with the remedial period. The strength of this score, Schachtel (1966) relates both to experiential level as well as perceptual hold. In this regard, the quality of this score reflects the control the child has over his impulses, as well as the quality of his relatedness to his surroundings (Mook, 1977).

As mentioned in the beginning of this dissertation, the study of the child's dynamic personality organization is quite a complex task. The complicating factors, aside from causality, is that of normality. Major personality theorists all ascribe to different orientations in these descriptions of this multidimensional organization. A major thread that appears to tie most of the major positions together is that of integration. When viewed along the

adjustment-maladjustment continuum, an integrated personality usually refers to both intra and interpsychic consistency. The major self theorists all hold to this concept, but by different names (self consistency, Lecky, 1945; self congruence, Rogers 1951). Major personality theorists also allude to this variable. Jung (1971) emphasized the individual's adaptive responses (i.e. the flexibility of the individual in adjusting to environmental change). Sullivan (Mullahy, 1952) speaks of syntaxic organization or the degree to which one's behavior is consensually validated by others. Erikson (1959) speaks of the relativity between the three personality processes (somatic, ego, and societal) and the importance of an equal weighting to the three.

The point to be made here is the strength of emphasis placed on intra and interpsychic integration in normal development. When the five boys are looked upon in this light, a number of interesting points are brought forward. For the four boys that have been referred to as exhibiting academic change, baseline results suggest anything but a syntaxic personality organization. When looked upon with closer scrutiny, the change these four boys showed during remediation was that of integration. Intraphysically, general trends on CPQ and results on the personalization index both suggest a maturing in ego function. Test results showed an integration across levels and a maturing in autonomous adaptability. But most impressive were the interpsychic changes noted. These four boys all showed a strong change in their social sensitivity and responsiveness. They became more aware of their interaction in their milieu. Their self systems all exhibited much higher degrees

of "harmony" or "consistency" post remediation. This is a major alteration in their adaptive ability. In this more general regard, this last research expectation that postulates a positive change in the boys personality organization should be accepted.

Before proceeding to a discussion of the Tomatis Technique and some theoretical implications of the findings here, one further area requires a closer look. Although not listed as part of the specific research expectations of this dissertation, the children's efficiency and task oriented behavior changed during APP.

Efficiency and Task Oriented Behavior

Four out of the five children began this study at least moderately below the average adjustment range in their school adjustment. All of these children were seen by their teachers as having difficulty concentrating on, and thereby finishing their work, would distract others, exhibited excessive daydream activity, and were poor listeners. In this regard, they all appeared to meet the criteria of DSM III (1980) for an attention deficit disorder without hyperactivity (314.000). These four children all exhibited many of the diagnostic criteria of both inattention and impulsivity that this diagnosis outlines. It should also be noted that these children also exhibited many of the associated features brought out in DSM III, of mood lability, temper outburst, low self esteem (as reported by teachers), etc. The manual also points out to the clinician that there might be a discrepancy between the reports of the parents and those of the teachers. When referring to these children, it is further recommended that primary consideration be

given to the teacher reports because of their familiarity with age norms.

Each of these four children made considerable progress over the remedial period in their school adjustment ratings. Ernest showed more task appropriate behavior as well as more energy to apply to academic tasks. Andrew's concentration and listening skills were positively effected concurrent with the remedial period. Also during this time, he was able to spend more time on his school work, and there seemed to be an improvement in his verbal expression. Although there was some improvement in Charles' listening and concentration skills, they were still low scores in his rating following the remedial period. The major improvement during this period appears to have been in his physical energy as well as cortical alertness. Darryl's improvement over the remedial period was seen in his attention, listening skills and his task oriented behavior, although there was little if any change in his daydream activity.

In summary, there appeared to be a positive change in the attention deficit noticed in four out of the five children studies concurrent with the remedial period.

Theoretical Implication and the Tomatis Technique

The theoretical premises on which the APP remedial technique is based is heavily dependent on the developmental-neurological process it propoerts to simulate. This section will briefly discuss the stages of this technique and the rationale on which it is based.

In way of a short summary of the results presented and discussed, a number of points should be reiterated:

- 1) Concurrent with APP, teachers observed a strong positive change in the social, self and school adjustment areas, in those four boys that academic progress was shown. This change was not mirrored by parental and residential ratings.
- 2) The boys' own ratings of their self esteem levels showed aggrandized patterns before remediation. During APP there was a large amount of variability in ratings but a general downward trend was noticed.
- 3) CPQ results showed a general improvement in social receptivity and awareness, confirming teacher rated findings. Rorschach protocols indicated an improvement in all five boys in personalization.

The rationale on which this dissertation was based assumes a number of developmental precursors to the reading disability per se. The literature suggests that the reading disability has an affective component originating partially in the child's separation-individuation process. It was also stated that the reading dysfunction is in fact only one aspect of the communication disorder; that the dyslexic child also maintains a difficulty decoding his environment, as well as the written word. Tomatis (1978) maintains that the reading disability is only part of the broader dysfunction. Implicit within this disorder is an immature audio-psycho-linguistic organization, as well as inflexible adaptive strategies. It follows from this etiological picture that the child's referent system (self) and his ability to gauge and evaluate the realities through which they live, would become disoriented.

As previously outlined in the review of literature chapter, re-education of dyslexia, via the APP method, is a three stage process: the passive phase; the training phase; and the performance phase. Tomatis (1978) conceptualizes the passive phase as a restructuring period, and places major emphasis on its importance for successful remediation. He postulates that the child is returned to a developmentally earlier communication plateau, and is

redirected back through a more normalized communication and listening process. In his theorizing, Tomatis connects this process with a restructuring of the child's underlying affective organization as well. The manifestations of a successful passive phase of programming, according to Tomatis, should be an improvement in the child's general attitude toward communication with his environment; i.e. more alertness, and exhibiting a "great desire to live and to exteriorize." (Tomatis, 1978; p. 147).

In using the two measures that were administered halfway into the remedial period (the CPQ and the Rorschach), since for most of the children this first phase of APP lasted at least four months, a number of interesting trends surfaced.

On the CPQ, across all five children, two scales exhibited change concurrent with the first half of the remedial period; scale C showed a two sten score rise in all children over this period; and scale F, showed at least a two sten score rise during this period. As mentioned previously, scale C is defined by the authors as the strength of the child's ego skills. More specifically it is a trait that measures "the level of natural dynamic integration, emotional control and stability." (Cattell et.al. 1972; p.26). Scale F is reported to measure the surgency of attitude the child expresses. So a rise in this scale can be seen as a measure of improvement in outlook.

In an interesting comparison to the rise in scale C on the CPQ, the affective index on the Developmental Rorschach Rating Scale fell for four out of the five children (save Charles), during the first five months of the remedial period. It appears then, that

although there was an improvement in the trait defined as ego-strength, there was also a re-organization, almost a regressive process, occurring in the child's affective integration. Three out of the four affective indices rebounded over the final five months of intervention.

It is also of importance to note, that teachers during this period rated strong gains in self, social and school adjustment in the majority of the boys studied.

Whereas the first phase of APP treatment contends to re-awaken the innate communicative desire within the individual, the second two stages seek to break the egocentric bond that has hindered his personal growth (Tomatis, 1978). They are marked by increased self awareness and a sense of separateness from his parental attachment.

The score which most closely approximates this change would be the personalization index on the Rorschach. This score rose for the majority of the children over the last five months of APP. In general, these changes also support the theoretical significance that Tomatis postulates for this period.

Tomatis' approach to the remediation of dyslexia assumes an interrelationship between language, affect and reading. The APP remedial process attempts to re-direct the child back through both his linguistic and humanization processes. The logic behind this technique is that teaching the child to control his auditory-phonatory-linguistic process will positively change his inter and intrapsychic organization.

In general, the overall results of this study support a number of previously stated theoretical orientations. It is clear, that

concurrent with remedial success, a number of psycho-social variables change positively. These changes appear to effect, in varying degrees, three levels of the child's personality: how significant others view him; how he consciously views himself; and the "deeper" levels of his psychic structure. More importantly, the children who showed academic success also exhibited a more integrated personality organization.

Strengths and Weaknesses

Design and Methodology

The major problem inherent in the case study approach is that of causality. Because of the threats to internal validity (Campbell and Stanley, 1963), the causality factors cannot be determined and remain vague and ambiguous. In the present study, the influence of the Child Study Centre School, the residential placement of two of the children, and the therapeutic attention paid to the five children during the remedial process, could have all singly or in tandem, effected change on the reading and psycho-social/personality measures, regardless of the APP remedial process. But even with these intervening variables, the evidence of a remedial effect is strong. The question of causality remains a central issue, not between modality and change, but between reading skill improvement and its relationship to change in the psycho-social/personality measures.

Although the ethical objection of withholding treatment, however inadequate or unproven is a strong one, the relationship between these above two factors would have been clearer had a control group been used. Even though the literature does not

suggest that any of these variables would change concurrently without the remedial process, the issue of normalized change and growth in the dyslexic/learning disabled child remains a sketchy issue.

Across a number of children, the question of time-limited remedial intervention is brought out. It is next to impossible to pre-determine the length of the remedial period prior to its beginning. The decay in some of the followup scores, could very well have been because of incomplete remediation as well as only a temporary improvement.

The case study approach did highlight the heterogeneity of the psycho-social/personality characteristics of the five children studies. This was evident both before the remedial process, and in the changes that were recorded. The variation of these children across the remedial period was by no means totally consistent. Although some broad trends were revealed, the subtleties of the individual child changes might have been overlooked with other experimental approaches. The strength of the case study approach lies not in the unequivocal presentation of conclusions, but in the directions that its results suggest (Kazdin, 1980; Barlow, 1981).

Instrumentality

Academic and Criterion Testing

Both tests used to monitor academic progress (Wrat and Gates) performed fairly well during the course of the study, and are well suited for the intensive case approach.

The issue of definition in the dyslexic/learning disabled child still remains a thorn in the side of the researcher looking

into this educational dysfunction. This point was made clear by the comparisons between the PBRS and the Learning Quotient. Obviously, before the intervention period, they both showed all children in this study to be learning disabled. After remediation, on the PBRS, all five children made sufficient progress and met the criteria for being non-learning disabled. On the learning quotient, only two of the children made the criteria cutoff. By these results, the learning quotient is much more selective in its criteria of success than the PBRS. But academic results could have been reported quite differently had only one of these measures been used in this study.

This researcher found the Tomatis criteria for change too amorphous. The audiometric technique, the audiolaterometry, and the personal interview all need further specification and elaboration. This is especially true in the following areas:

- 1) Criteria for phase change: i.e. specific criteria levels on the above three measures for termination of the any of the three phases of re-education.
- 2) Both treatment effect norms and normal developmental changes on both the audiometric and audiolaterometry techniques requires aggregation.

Psycho-Social/Personality Measures

As Kazdin (1981) has pointed out, a fairly large discrepancy exists between clinical practice and psychological research. He further recommends that continuous assessment can strengthen the internal validity of the case study approach. Although, the objectification and systematic collection of data is of utmost importance for case study research, most of the widely used instruments for psychological assessment by clinicians could not stand the rigors of successive assessment. Even the most widely used rating scales and more objective measures of personality

organization could not meet these standards. In the present research, assessment was only carried out a maximum of eight times. Even with those few periods, a boredom effect was noticed in the children tested.

In many of the studies that have utilized continuous assessment, some form of behavioral observation has been used. From such behavioral information only inference can be made about the child's dynamic personality organization. In order to close the gap between clinical relevance and psychological research, the first bridge that must be crossed is that of instrumentation.

The Tomatis APP Remedial Re-Education

Yeaten and Sechrest (1981) outline four areas in which to judge the likelihood that a treatment modality will have the intended outcome:

- 1) Amount and intensity-in comparison to other more conventional remedial techniques, the APP remediation progress is relatively intense. Not many of the widely used techniques recommend at least one hour a day, for a period varying from six months and up, dependant on the severity of the disorder. Tomatis has also suggested, in his unpublished lectures, that the re-education process could be improved with an increased daily intensity.

- 2) Theoretical rationale-in his writings and lecturing, Tomatis frequently bridges the gap between physiological functioning and psychological process with at times, less than adequate experimental support for his positions. One gets the impression that the testimonial proof overstates the case. There is no doubt

though, that this technique, along with its underlying theoretical rationale requires further experimental scrutiny. Of special emphasis, Tomatis' developmental theory needs further elaboration and clarification. The Developmental Communicative-Linguistic relationship he suggests, especially in utero, is certainly one aspect that requires enunciation and study.

The link Tomatis suggests between the audiometric listening test and the individual's physiological and personality organization is a second area where more supporting experimental evidence would lend more credibility to this entire approach.

3) Clear-detailed treatment protocol-this area as well, requires further experimental amplification. As mentioned, the link between aspects of the listening and audiolaterometry testing and the re-education process needs more well defined experimental support. This is especially relevant pertaining to the diagnostic signs on both measures that prompt passage from one remedial phase to the next.

4) Training of therapists-the most important aspect of the APP remedial program is the integrity of the treatment modality: i.e. the degree to which the program is delivered as intended. Because of the above stated weaknesses, the quality training of remedial therapists is of utmost importance.

In conclusion, the major results of this dissertation support the connection between certain psycho-social variables and the remedial process. There were other results that do not support existing trends in the literature. Results here also suggest that the APP remedial technique be further researched into the subtleties of its relationship to reading and personality.

Chapter V

Summary and Conclusions

The majority of the research in the field of dyslexia and learning disabilities has focused on the information processing and cognitive aspects of the dysfunction. This present research sought to evaluate the relationship between the child's psycho-social/personality adjustment and the remedial process.

The literature that has focused on this area assumes a distinct, yet ambiguous relationship between certain psycho-social/personality variables and the reading disability. Both diagnostically and developmentally, the experiential role of language appears to play a major role in both the socialization process. It also provides the structural integration which underlies the motivation for communication. In general, the literature is subdivided into three areas of concern: social perception and interpersonal skill; self concept; and frustration-aggression.

Tomatis (1978) hypothesized that by simulating the child's auditory-linguistic developmental process, the re-education of the dyslexic child is possible. He further assumes the reading disability is reflective of both an immature neurological system, as well as an egocentric psycho-social/personality organization. The re-education of the child's auditory-linguistic process should impact strongly on both his socialization skill as well as his personality organization.

To study the concurrent effects of the remedial process and the psycho-social/personality changes in the dyslexic child, an intensive case study approach was utilized. This consisted of a two month baseline period, a ten month remedial period and a two month followup period. Eight children were initially selected from the clinical population at the Child Study Centre, only five of which met the following criteria for inclusion in the study:

- 1) Criteria of definition—this was a composite definition arrived at from a number of generally accepted definitions of dyslexia and learning disability;
- 2) Discrepancy Criteria—the child had to be considered learning disabled by the Myklebust learning quotient;
- 3) Behavioral Criteria—the child must have been judged learning disabled by an objective behavioral rating scale (Myklebust Pupil Behavior Rating Scale);
- 4) APP Criteria—the child had to meet the three pronged criteria established by Dr. Tomatis for dyslexia: listening test, audio-vocal laterality, and a behavioral relational interview by Dr. Tomatis;
- 5) All children had to be judged free from neurological involvement; and
- 6) Parental approval had to be secured.

The investigation involved administering six tests of psycho-social adjustment and personality at fixed intervals through the course of the remediation. The psychometric measures employed were: The Child Behavior Rating Scale (rated by teachers and parents); The Inferred Self Concept Scale (rated by teachers); The Self Esteem Inventory (rated by the child); the Child Personality Questionnaire; The Rosenzweig Picture Frustration Study; and the Rorschach technique. The Rosenzweig was scored by two blind scorers with a third deciding the discrepant scores. The Rorschach was scored and rated according to the Rorschach Developmental Rating Scale, by two blind scorers with a third deciding the discrepant scores. Two academic performance tests (The Wide Range Achievement Test and The Gates MacGinitie Reading Test) were also administered at fixed

intervals over the course of the study, to measure academic progress.

The results of this study must be viewed from many different angles. For the four children who showed at least moderate success in the alleviation of their reading disability, many of the psychosocial/personality measures appeared to change concomitantly.

For these four children, teacher rated self, social and school adjustment all showed substantial improvement concurrent with the remedial period. The areas of improvement centered around less fear in the interactional process, more appropriate interpersonal peer reactions as well as more task oriented behavior.

Parental and residential ratings of the child's social and self adjustment showed a discrepancy from teacher ratings, both during the baseline and intervention periods. In general, these ratings (parental and residential) were much higher for all the children during the baseline period and did not mirror the change seen by the teachers.

The teacher ratings of these specific four children, in their inferred self concepts, showed fairly strong improvement. Progress in this area for the most part was related to a maturing in social skill.

In four of the five children studied, some aspects of their subjective self esteem ratings were aggrandized during the baseline period. For the most part, these levels achieved more realistic levels concurrent with the remedial period. For the fifth child, esteem levels rose concomitant to the remedial period.

Results of the Child Personality Questionnaire were different for all children. If a trend was evident, it was toward more group-oriented behavior and for some children, higher ego strength.

Two patterns were evident with regard to the children's Rosenzweig responses before the remedial period. One group of three children showed a more passive, avoidant type of response pattern, whereas the remaining two children exhibited a more aggressive pattern. Two children, from the more passive group, exhibited more aggressive, involved responses concurrent with the remedial period, but these pattern changes did not persist over the followup period.

Rorschach results were also quite different for each child. In general, concomitant with the remedial period, four of the five children showed a change in protocol which would be suggestive of a cognitive improvement in their ability to abstract. Affectively, scores were quite variable; especially over the first five months of the remedial process, which signified what could be seen as a reorganization process in this level of emotional integration. There were also signs across four of the children, of an increasing differentiation in their individuation processes.

When taken in total, the psycho-social measures exhibited a higher level of intra and interpsychic integration for those children who showed academic progress. Developmentally these children were seen as maturing in their individuation process.

The remedial technique utilized in this research, APP, proved an interesting approach to the reading dysfunction. Results presented suggest that concurrent with the remediation there were positive academic effects in four out of five boys as well as changes, to

varying degrees, their psycho-social functioning. Out of the three progressive stages of this re-education technique, the first stage (passive listening) appears the most intense for the child. This was evident in many of the psycho-social measures used. Because of the time limitations of the design used, the latter two stages require further enunciation.

The present study was conceived as an investigation into the relationship between psycho-social personality variables and the remedial process. It was not designed to provide a definitive answer to this relationship, but should be viewed as direction for future research. There are still many unanswered questions, which, with better controlled studies, can lead to more precise and conclusive results. Some areas which might prove informative are as follows:

1) The research into change within the psycho-social/personality variables of the dyslexic/learning disabled child is beset by the lack of normative study of these children. There is little in the literature from which to judge clinical criteria for success or its lack thereof.

2) Results of this study suggest that, for these children, improvement in their academic skills was mirrored by improvement in psycho-social/personality functioning. This relationship though requires further scrutiny. Future research must control for more of the internal threats to validity than was provided here. As an example, remedial treatment gains must be partialled out of special school or class, residential treatment and the effect of one-to-one

attention. As suggested earlier, control groups would most likely be the most economical approach to this difficulty.

3) Change in these children was especially evident in the areas of interpersonal relationships, self adjustment and the ability to accurately assess their experience. The etiological relationship of these areas to academic change/improvement might prove fruitful in the study of dyslexia. Would studies examining these areas provide supporting results using both differing remedial approaches and more specific variables?

4) An interesting finding of this research has been that these children are viewed somewhat differently by those in their school environment, than by those in their home/residential environment. Parental and familial perceptions and expectations of their dyslexic child have not been given the attention in the literature that they deserve.

5) Another interesting finding of this research was the tendency of these boys to overrate some areas of their self esteem. The research in this area does not confirm this finding, although initial results here could be an effect of the academic setting. Would a study comparing mainstreamed dyslexic children vs special class children vs special school children exhibit any difference in esteem levels?

6) The Tomatis APP remedial technique needs further study in many areas. They include: the relationship between auditory laterality and attentional skill; the relationship between high frequency sound stimulation and efficiency in task oriented behavior; the general relationship between the perceptual cognitive process and the

communicative listening ability of the child. The APP remedial protocol itself requires further elaboration, much of which was alluded to earlier.

In summary, concomitant with the APP remedial process gains were seen in certain psycho-social personality variables. Evidence presented here supports the following three conclusions:

- 1) This study was limited methodologically in the conclusions it could draw between the relationship of reading skill improvement and APP.

- 2) A strong but heterogenetic relationship appears to exist between academic improvement and certain psycho-social/personality variables in these dyslexic children.

- 3) Enough evidence exists here to reveal the promising nature of APP as a remedial technique. Further research should be initiated to evaluate this process.

Chapter VI Critical Evaluation

The Tomatis approach to the remediation of dyslexia is unique in the field of psychology and education in the sense that it is rooted in audio-psycho-neurophysiological functioning. The APP approach arose from theoretical inferences that were based on clinical experience. It does not utilize accepted remedial approaches but attempts to reorganize auditory and listening patterns.

Theory building in psychology is a complex process in which empirical facts are organized into hypothetical constructs based on scientific observation. These hypothetical constructs are then subjected to experimentation to evaluate their predictive power and their ability to account for reality. This type of dialectical approach eventually brings the researchers to formulate theoretical conclusions based on empirical realities. Tomatis' theory, based on a large degree of clinical work presents a position that is too abstract and that uses hypothetical constructs which are not sufficiently based on an empirical infrastructure. The theory is both too abstract and too general, attempting to account for every aspect of organismic functioning. Verification of the theory is dependent on the establishment of a strong empirical base.

This section will center around three areas: certain aspects of the Tomatis theory; the APP method; and further suggestions for future research. The weakness of the APP theoretical infrastructure will be explored within this context.

The Theoretical Foundations of APP

This section will explore three aspects of APP that are central to its theoretical foundation: the energizing aspect of the auditory

sense, the intrauterine communication between mother and fetus and auditory lateralization.

The entire APP process is centralized around the importance of the auditory sense for proper organismic functioning. A major tenet ascribed to auditory functioning in APP is that of energizing the cortex. Tomatis maintains that high frequency sound, provides the cerebral cortex with up to 60% of its neurological energy (Tomatis, 1973). It is this belief that has fostered the use of filtered classical tapes and voice in the APP approach. These sounds are filtered to exaggerate the higher frequencies and eliminate the lower ones. In his writings, Tomatis describes types of classical music which would make the most use of this energizing element. In analyzing the foundations upon which APP is based, this area would appear a logical beginning point. Whether or not high frequency sound provides any cortical stimulation is still to be shown. To expand on this further, little if any research has been directed to the effects of any filtered sound (music or voice) on the psycho- or psycho-neurological functioning of people. This fact is central to APP and the theoretical foundation on which it is based.

Certain aspects of Tomatis' overall neurophysiological theorizing find support in comparative research. For instance, the afferent cells within the basilar membrane are highly specialized for responding to differential frequencies. Those cells specifically designed to record higher frequencies are both more specialized and outnumber those of the lower frequencies (Moore, 1977). Research has also shown the auditory system to be a highly effective pattern processor and filtering system. (Sanders, 1977). Efferent fibers are able to enhance frequency levels of afferent input thereby attenuating certain impulses. This type of lateral inhibition renders the system self-regulating and permits the

control of only certain stimuli patterns to pass to higher level cells. At the level of the auditory cortex itself, it has been shown that different areas of the cortex respond to different frequency levels with the middle-higher frequency areas providing the larger mass (Gacek, 1972). All of this research although confirming some aspects of Tomatis' theorizing does not validate his statement about the energizing activity of high frequency sound. It also does not suggest that the filtering of voice would necessarily provide any beneficial effects. The entire area of the behavioral effects of any sound frequency levels needs to be researched starting from the effects on lower mammals to man. The neurological mechanisms exist to undertake such a program. Average evoked potentials have proven a direct way to measure cortical activity (Chapman, 1973). Other promising methods for measuring cortical activity are both alpha measurement and EEG activity in general (Gruber & Segolowitz, 1977).

A second major theoretical area that remains a weakness in APP theory is Tomatis' speculations on both prenatal and perinatal development. Tomatis states that communication between mother and fetus during pregnancy forms the basis for future socialization of the child. APP is based on this belief utilizing filtered maternal voice to begin the re-education process.

Research on prenatal and perinatal development provides some support to Tomatis' position. Cochlear as well as middle and inner ear structures have reached full adult size by the fifth fetal month (Eisenberg, 1976). It has been shown that the fetus shows response to both pure tones and other sounds (Bernard & Sontag, 1974). Eisenberg (1976) shows that preadapted auditory specificity of some kind exist in the

human newborn. She presents research that suggests the existence of intrinsic audiovocal relays, innate acoustic preferences and race specific differences in speech and hearing mechanisms.

Sanders (1977) in reviewing research on infant speech perception concludes "some aspects of processing in a speech mode are either a genetically endowed capacity in infants, or they are learned within the first few weeks of life." (p. 166). Sanders goes on to describe the sophistication of the infants' phonetic capabilities. In his conclusions, Sanders leaves out the possibility that some aspects of an infants sophisticated auditory and phonetic capabilities might be the result of prenatal communication. However, there is nothing in the literature to the writers knowledge that would rule out this possibility.

The final area to be covered in this section is that of auditory laterality. In the APP process major emphasis is placed on lateralizing the child's listening skills to the right ear and subsequently the left hemisphere (Tomatis, 1973). This aspect of the APP remedial process is central to Tomatis' theorizing on the re-education of the dyslexic child. He maintains that the pathways from right ear to left hemisphere provide the most efficient form of neurological organization.

Physiological studies have shown that the auditory pathway involves both ipsilateral and contralateral connections to both lower and higher cortical regions. (Milner, 1962). Furthermore, Milner (1962) has shown through lesion and frequency hearing loss studies that there is a functional asymmetry between contralateral auditory pathways and cortical function. Research both from psychophysical and lesion studies indicate that linguistically significant acoustic signals are preferentially analyzed by the right ear and subsequent left hemisphere (Whitaker, 1971). It has been shown that at all ages the two hemispheres

are differentially sensitive to some acoustical aspects of stimuli (Molfese, 1977). Evoked potential literature strongly suggests that even prior to a year after birth, linguistic acoustical stimuli are lateralized to the left and non-language stimuli to the right (Molfese, 1977).

On studies relating temporal auditory preference to reading ability, a great deal of evidence exists suggesting right ear preference to strong reading skill (Bakker & de Wit, 1977). Bakker (1967, 1969) using dichotic digit and monaural presentation designs, has shown a marked right ear preference for above average readers. Left ear advantages has been shown to be significantly related to dyslexic groups of children (Satz & Van Nostrand, 1972, Sparrow & Satz, 1970). It also appears that the importance of auditory preference is developmentally linked. Auditory preference for right ear, gains in significance the older the child becomes. Its significance appears to begin by 7-8 years of age (Bakker, Smink & Reitsma, 1973).

The above research directly supports many of Tomatis' statements and beliefs. Although more research needs to be done to correlate right ear dominance training with improvement in reading skill, the link appears justified. For this area there is more empirical evidence than the previous two areas. However although lending support, these experimental evidences are not integrated into Tomatis' presentation of theory. This support is important to provide the empirical foundation of theory.

The above three theoretical issues (high frequency sound and its energizing effect, intra-uterine communication and auditory lateralization) point to the major difficulty in Tomatis' formulations. They point to the broad nature of the hypothetical constructs he presents, most of which have some basis in empirical fact but are also heavily

weighted with inference.

The APP Method

Other than the major theoretical weaknesses that underlie the APP approach, the APP method itself has some obvious weaknesses. The diagnostic and evaluative procedures that are utilized (TLT and audiolaterometry) all lack the standardization needed to make them more viable tools of research and clinical practice. The following aspects require further research and standardization of procedure:

(1) Administration: The administration of the three diagnostic techniques mentioned above all require more stringent guidelines. The successful utilization of psychological and psychoneurological diagnostic procedures all depend on established norms of reliability and validity. The administration of the TLT and audiolaterometry require being subjected to such measures of significance. Normative guidelines for both these tools need to be established and followed.

(2) Validity and Reliability: Basic reliability, internal consistency, validity and normative boundaries need to be established for both the TLT and the ALM.

It is especially essential that reliability validity and normative research be carried out in regards to the selectivity and spatialization subtests of the audiometric evaluation. The results of these measures are very important in the success of the APP process.

(3) Interpretation: The psychological and physiological predictive properties Tomatis ascribes to the child's listening test results could easily classify this measure as a projective technique. This being the case cross validation research is imperative.

The theoretical rationale for interpretation of the TLT needs to be spelled out so that results can be clearly corroborated.

(4) Stages of APP: An important aspect of the diagnostic procedures are their use as an evaluation tool for the three stages of APP. The child's progress through the APP is monitored by the changes reflected on the diagnostic evaluations. For this reason, the guidelines for change must be clear and well documented.

The different stages of the APP itself require more indepth evaluation.

Future Research: The future success of the use of the APP approach is dependent on a well organized systematic research effort. This effort should center around providing empirical evidence for APP in the significant areas of: (a) theory, (b) diagnostic procedures, and (c) the process of APP application.

(a) Theoretical: The three areas outlined previously require indepth empirical evaluation. For instance, the role of sound frequency and its direct or indirect impact on organismic functioning must be clarified. Research should also focus on the behavioral effects of sound and voice filtering on child and adult functioning. More experimentation needs to be centered around auditory lateralization. The importance or irrelevance of lateralizing the child's auditory system needs to be explored.

(b) Diagnostic Procedures: A major research effort needs to be undertaken in regards to the diagnostic and methodological aspects of APP. More specifically standardization procedures as well as reliability, validity and normative studies should be carried out on the TLT and ALM.

(c) Process of APP Application: Finally, as brought out in the previous chapter of this thesis the APP re-education process needs further elaboration. Research needs to outline the effects of this treatment

modality and with which group of children it has its most beneficial effects.

In summary, the APP approach to the remediation of dyslexia offers an innovative approach theoretically and clinically. The theory has come under major criticism because of its highly inferential and speculation nature. Its hypothetical constructs are both too broad and abstract and requires a major research effort to verify their significance and heuristic value.

Bibliography

- Abrams, J.C. A study of certain personality characteristics of non-readers and achievers. Unpublished Doctoral Dissertation, Temple University. Dissertation Abstracts, 1955, 16, 377.
- Abrams, J.C. and Kaslow, F. "Family Systems and the learning disabled child: Intervention and Treatment" Journal of Learning Disabilities, 1977, 10, 27-31.
- Abramson, L. Y., Seligman, M. E. P. and Teasdale, J.D. Learned helplessness in humans: Critique and Reformulation. Journal of Abnormal Psychology, 1978, 87, 49-74.
- Allport, G. W. Personality: A Psychological Interpretation, New York: Holt, 1937.
- Allport, J. W. The Ego in Contemporary Psychology. Psychological Review, 1943, 50, 451-470.
- Ambrose, J.A. The smiling response. Unpublished Doctoral Dissertation. University of London, England. 1960.
- Ames, L. B., Metraux, R W., Radell, J. L., and Walker, R. N. Child Rorschach Responses, New York: Brunner-Mazel, 1974.
- Ames, L.B. and Walker, R. N. Prediction of Later Reading Ability from Kindergarten Rorschach and I Q Scores. Journal of Educational Psychology. - 1964, 55, 309-313.
- Anton, June L. Intensive Experimental Designs: A Model for the Counselor/Researcher. The Personnel and Guidance Journal, 1978, 56, 273-278.
- Applebee, A. N. Research in Reading Retardation: Two Critical Problems. Journal of Child Psychological Psychiatry, 1971, 12, 91-11
- Athey, I., Personality factors and the development of successful readers. In, G.B. Schick and M. M. May (Ed), New Frontiers in College Adult Reading. Yearbook of the National Reading Conference. 1966, 15, 133-139.
- Athey, I., and Holmes, J. A., Reading Success and a personality value systems syndrome. U. S. Department of Health, Education, and Welfare; Office of Education. 1967. Eric, Ed 026547.
- Ausubel, D. P., and Sullivan, E. V., Theory and Problems of child Development. New York, Grune and Stratton, 1970.
- Axline V., Non Directive Therapy for Poor Readers. Journal of Consulting Psychology, 1947, 11, 61-69.

- Baer, D. M., Wolf, M. M. and Risley, T. R. Some Current Dimensions of Applied Behavior Analysis. Journal of Applied Behavioral Analysis, 1968, 1, 91-97.
- Bakan, D. On Method: Toward a Reconstruction of Psychological Investigation. San Francisco: Jassay-Bass, 1967.
- Balow, B. - The Long Term Effect of Remedial Reading Instruction. The Reading Teacher, 1965, 18, 581-586.
- Bannatyne, A. Language Reading and Learning Disabilities. Springfield, Illinois: Charles C. Thomas, 1971.
- Banreti-Fuchs, K. M. Attitudinal Correlates of Academic Achievement in Elementary School Children. British Journal of Educational Psychology, 1978, 48, 176-185.
- Barber, L. Immature Ego Development as a factor in retarded ability to read. Unpublished Doctoral Dissertation. University of Michigan. Dissertation Abstracts, 1952, 12, 503.
- Barlow, D. H. Hersen, M. Single-Case Experimental Designs. Archives of General Psychiatry, 1973, 29, 319-323.
- Bayley, N. and Schaefer, E. S. Correlations of Maternal and Child Behavior with the Development of Mental Ability. Monographs for the Society for Research in Child Development, 1964 (6 serial #97).
- Bazemore, J. S. and Gwaltney, W. K. Personality and Reading Achievement: The Use of Certain Personality Factors as Discriminatory. California Journal of Educational Research, 1973, 24, 114-119.
- Beatty, J. R. Construct Validation of an Instrument for Screening Learning Disabilities. Journal of Learning Disabilities, 1979, 12, 58-65.
- Beebe, J. D. Self-concept and reading achievement among elementary students in an experimental program. Unpublished Doctoral Dissertation, University of North Dakota, 1972.
- Barlow, D., On the Relation of Clinical Research to Clinical practice: Current Issues New directions. Journal of Consulting and Clinical Psychology, 1981, 49, 147-155.
- Bell, D. B., Lewis, F. D., Anderson, R. F., Some Personality and Motivational Factors in Reading Retardation. Journal of Educational Research, 1972, 65, 229-233.
- Bell, J. E. Emotional Factors in the Treatment of Reading Difficulties. Journal of Consulting Psychology, 1945, 9, 125-131.

- Bensen, G. P. and Kuipers, J. L. Personality Correlates of Intellectual Performance Among Head Start children. 1974, Eric, #ED 097121.
- Benton, A. L. Dyslexia in relation to form perception and directional sense. J. Money (ed). Reading Disability: Progress and Research Needs in Dyslexia. Baltimore: Johns Hopkins Press, 1962.
- Berger, N. S. Why Can't John Read? Perhaps He's Not a Good Listener. Journal of Learning Disabilities, 1978, 11, 31-36.
- Berko, Jean. The child's Learning of English Morphology. Ward, 1958, 14, 140-177.
- Berlyne, D. E. Attention as a problem in behavior theory. In D. I. Mastofsky (ed). Attention: Contemporary theory and analysis. N. Y.: Appelton-Century Crafts, 1970, 25-49.
- Berlyne, D. E. Conflict, Arousal and Curiosity. N. Y.: McGraw-Hill, 1960.
- Bills, R. Nondirective Play Therapy with Retarded Readers. Journal of Consulting Psychology, 1950, 14, 140-149.
- Blackham, G. J. A clinical study of the personality structures and adjustments of pupils underachieving and overachieving in Reading. Unpublished Doctoral Dissertation Cornell University, 1954, Dissertation Abstracts, 15, 1199. MIC A 55-1603.
- Blanchard, P. J. Reading Disability in Relation to difficulties of Personality and Emotional Development. Mental Hygiene, 1936, 20, 384-413.
- Blanchard, P. J. Psychogenic Factors in Some Cases of Reading Disability. American Journal of Orthopsychiatry, 1935, 5, 301- 371.
- Bland, R. B. Relation of auditory discrimination to reading achievement. Dissertation Abstracts International, 1970, 31, 1655A-1656A.
- Blank, M., Weider, S. and Bridger, W. Verbal deficiencies in abstract thinking in early reading retardation. American Journal of Orthopsychiatry, 1968, 38, 823-834.
- Blatt, S. J., and Allison, J. Methodological considerations in Rorschach research: The W response as an expression of abstractive and integrative strivings. Journal of Projective Techniques, 1963, 27, 269-278.
- Bodwin, R.F. The Relationship between immature self concept and certain educational disabilities. Dissertation Abstracts, 1959, 19, 1645-1646.

- Bower, E. M. Early Identification of Emotionally Handicapped Children in School. Springfield, Ill.: Charles C. Thomas, 1969.
- Box, G. E. T. and Taio, G. C. A change in level of non-stationary time series. Biometrika, 1965, 52, 181-192.
- Bracht, G. H., and Glass, G. V. The External Validity of Experiments. American Educational Research Journal, 1968, 5, 437-474.
- Bricklen, B. and Bricklen, P. M. Bright Child-Poor Grades: The Psychology of Underachievement. New York: Delacorte Press, 1967.
- Bronson, W. C. Central Orientations, A study of Behavior Organization From Childhood to Adolescence. Child Development, 1966, 37, 125-155.
- Bronson, W. C. Adult Derivatives of Emotional Expressiveness and Reactivity Control: Developmental Continuities From Childhood to Adulthood. Child Development, 1967, 38, 801-817.
- Bronson, W. C. Stable Patterns of Behavior: The Significance of Enduring Orientations for Personality Development. In J. P. Hill (Ed.) Minnesota Symposia on Child Psychology (Vol. 2), Minneapolis: University of Minnesota Press, 1969.
- Brookover, W. B. and Thomas, S. and Paterson, A. Self Concept of ability and school achievement. Sociology and Education, 1964, 37, 271-278.
- Brown, B.S. Forward in Dyslexia an Appraisal of Current Knowledge, Benton A. L. and Pearl, D. P. (Eds). NY: Oxford University Press, 1979, V-VII.
- Bruck, M. A Study of Age Difference and Sex Differences in the Relationship Between Self-concept and Grade Point Average. Unpublished Doctoral Dissertation, Michigan State University, 1957.
- Bruininks, V. L. Actual and Perceived Peer Status of L-D students in Mainstream Programs. Journal of Special Education, 1978, 12, 51-58.
- Bryan, T. S. An observation analysis of classroom Behavior of children with Learning Disabilities. Journal of Learning Disabilities, 1974, 7, 26-34.
- Bryan, T. S. Peer Popularity of Learning Disabled Children. Journal of Learning Disabilities, 1974a, 7, 621-625.
- Bryan, T. S. and McGrady, H. J. Use of a Teacher Rating Scale. Journal of Learning Disabilities, 1972, 5, 199-205.

- Bryan, T. S. and Wheeler, R. Perception of Learning Disability Children: The Eye of the Observer. Journal of Learning Disabilities, 1972, 5, 484-488.
- Bryant, D. N. Learning Disabilities in Reading. In Reading As An Intellectual Activity, (ed) J. Figurel. International Reading Association Proceedings, 1963, p. 144.
- Buerger, T. A. A Follow-Up of Remedial Reading Instruction. Reading Teacher, 1968, 21, 329-334.
- Buhler, C. Genetic Aspects of the Self, Annals of the New York Academy of Sciences, 1962, 96, 730-764.
- Calligan, R. C. Concurrent Validity of the Myklebust Pupil Rating Scale in a Kindergarten Population. Journal of Learning Disabilities, 1977, 10, 317-320.
- Camp, B. W. Learning Rate and Retention in Retarded Readers. Journal of Learning Disabilities, 1973, 6, 65-70.
- Caplin, M. D. The Relationship Between Self Concept and Academic Achievement. Journal of Experimental Education. 1969, 13, 13-15.
- Carrello, L. W. The Relation of Certain Environmental and Developmental Factors to Reading Ability in Children. Unpublished Doctoral Dissertation, Syracuse University, Dissertation Abstracts, 1957, 17, 125.
- Carroll, H. C. M. The Remedial Teaching of Reading: an Evaluation. Remedial Education, 1972, 7, 10-15.
- Carter, C. D. The Relationship Between Personality and Academic Achievement of 7 year olds. Unpublished Doctoral Dissertation, Indiana University, Dissertation Abstracts, 1958, 19, 1027.
- Costello, R. and Conti, A. P. A Follow-Up of Slow Readers After Three Years. Reading Improvement, 1977, 14, 52-54.
- Cenname, A. R. The School Behavior of Children with Good and Poor Self Concepts: A Case Study. Dissertation Abstracts, 1977, 38, (5-A) 2542-2543.
- Chaplin, M. D. The Relationship between Self Concept and Academic Achievement. Journal of Experimental Education, 1969, 37, 13-15.
- Chapman, J. W. and Boersma, F. J. Learning Disabilities, Locus of Control and Mother Attitudes. Journal of Educational Psychology, 1979, 71, 250-258.
- Charcot, J. M. "Un cas de suppression brusque et isolee de la vision mentale des signes et des objets (formes et couleurs).

- Lecons sur les maladies du systeme nerveux." Delahaye et Lacrosnie, 1887, 518, 3.
- Chassan, J. Stochastic Models of the Single Case as the Basis of Clinical Research Design. Behavioral Science, 1961, 6, 42-50.
- Chassan, J. B. and Bellak, L. An Introduction to Intensive Design in the Evaluation of Drug Efficacy during Psychotherapy. In L. Gottschalk and B. Auerbach (Eds) Methods of Research in Psychotherapy, NY: Appleton-Century-Crofts, 1965.
- Chassan, J. B. Research Design in Clinical Psychology and Psychiatry, NY: Appleton-Century-Crofts, 1967.
- Chassan, J. B. Statistical Inference and the Single Case in Clinical Design. In N=1 Experimental Studies in Single Cases (Eds) P. O. Davidson and C. G. Costello, NY: Van Nostrand Reinhold Co., 1969.
- Clairborne, J. H. Types of Congenital Symbol Amblyopia. Journal of the American Medical Association, 1906, 47, 1313-1316.
- Claparide. Bradylexie bei einem sonst. Normalen kinde. XI Meeting Swiss Neurological Society. Abs New 2161, 1916, 36, 572.
- Clements, R. O., Gainey, L. M., and Malitz, D. The Accuracy of Students' Perceptions of Themselves and Their Classrooms. Paper presented at the Annual Meeting of the American Educational Research Association. Boston, Massachusetts: 4/1980. ERIC # Ed 192453.
- Clements, S. D. Minimal Brain Dysfunction in Children: Terminology and Identification, Phase One of a Three-phase Project. N. I. N. D. B. Monograph, #3 Washington, D. C.: U. S. Department of Health, Education, and Welfare, 1966.
- Clemmens, R. Minimal Brain Dysfunction in Children. Children, 1961, 8, 179.
- Cohen, T. B. Prediction of Under-Achievement in Kindergarten Children. American Journal of Orthopsychiatry, 1963, 330-331.
- Colligan, R. C. Concurrent Validity of the Myklebust Pupil Rating Scale in a Kindergarten Population. Journal of Learning Disabilities, 1977, 10, 63-66.
- Collins, J. E. The Effects of Remedial Education. Educational Monographs #4, Edinburgh: Oliver and Boyd, 1961.
- Combs, C. F. Perception of Self and Scholastic Underachievement in the Academically Capable. Personnel and Guidance Journal, 1964, 43, 47-51.

Connolly, C. The Psycho-social Adjustment of Children with Dyslexia. Unpublished Ph.D. Thesis, Northwestern University, 1968.

Coopersmith, S. The Antecedents of Self-Esteem. San Francisco: W. H. Freeman and Company, 1967.

Costello, R. and Conti, A. D. A Follow-up of Slow Readers After Three Years. Reading Improvement, 1977, 14, 52-54.

Cress, J. N. The Relationship Between Self-Concept and the Discrepancy Between Actual and Expected Achievement. Dissertation Abstracts, 1975, 35, (12-B Pt 1) 6090.

Critchley, M. Developmental Dyslexia. London: William Heinemann Medical Books Limited, 1964.

Critchley, M. The Dyslexic Child. London: Heinemann Press, 1970.

Cronback, L. J. Beyond the True Disciplines of Scientific Psychology. American Psychologist, 1976, 30, p. 116-127.

Cruickshank, W. M. Some Issues Facing the Field of Learning Disabilities. Journal of Learning Disabilities, 1972, 5, 380-388.

Cummings, R. N. A Study of the Relationship Between Self-concepts and Reading Achievement at Third Grade level. Dissertation Abstracts, 1971, 31, (10-A), 5195.

Curry, D. R. Case Studies in Behavior Modification. Psychology in the Schools, 1970, 7, 330-335.

Davison, G. C. Systematic Desensitization as a Counterconditioning Process. Journal of Abnormal Psychology, 1968, 73, 91-99.

Delacato, C. H. A New Start for the Child With Reading Problems. NY: David McKay Co., 1970.

Dillard, C., C., B., An Analysis of Personality Factors and Reading Achievement in the Primary Grades. Dissertation Abstracts, 1975, 35, (11-A), 7119-7120.

Divoky, D. Education's Latest Victim: The Learning Disabled Kid. Learning, 1974, 3, 20-25.

Dollard, J., Doob, W. Miller, N. E., Mowrer, O. H., and Sears, R. R. Frustration and Aggression. New Haven: Yale University Press, 1939.

Dornbush, R. L. and Basow, S. The Relationship Between Auditory and Visual Short-term Memory and Reading Achievement. Child Development, 1970, 41, 1033-1044.

- Downing, J. Cognitive Factors in Dyslexia. Child Psychiatry and Human Development, 1973, 4, 115-120.
- Dukes, W. F. N=1. Psychological Bulletin, 1965, 64, 74-79.
- Dunn, L. Minimal Brain Dysfunction: A Dilemma for Educators. In Frierson, E. and Barbe, W. (eds). Educating Children with Learning Disabilities: Selected Readings. New York: 1967. Appleton-Century-Crofts.
- Edelston, H. Educational Failure with High Intelligence Quotient: A Clinical Study. Journal of Genetic Psychology, 1950, 77, 85-116.
- Edgar, E. and Billingsley, F. Believability When N=1. The Psychological Record, 1974, 24, 147-160.
- Edgington, E. S. Statistical Inference from N=1 Experiments. The Journal of Psychology, 1967, 65, 195-199.
- Eisenberg, L. Reading Retardation: Psychiatric and Sociological Aspects. Pediatrics, 1966, 37, 352-365.
- Eisenberg, L. Definitions of Dyslexia: Their Consequences for Research and Policy in Dyslexia: An Appraisal of Current Knowledge, A. L. Benton and D. Pearl (eds) NY: Oxford University Press, 1979, 29-42.
- Ekwall, E. E. Diagnosis and Remediation of the Disabled Reader. Boston: Allyn and Bacon Inc. 1976.
- Engler, V. B. Analphabetia Partialis, Monat, Psychological News, 1917, 42, 119-132.
- Erikson, E. H. Growth and Crisis of the Healthy Personality. In M. Senn (ed) A Symposium on the Health Personality. NY: Josiah Macy Foundation, 1950, 50-55.
- Erikson, E. H. Identity and the Life Cycle. In G. S. Klein (Ed) Psychological Issues, NY: Basic Books, 1959, 18-171.
- Erikson, E. H. Childhood and Society, NY: Norton Press, 1950.
- Farr, R. and Roelbe, P. Measuring of reading: Intercorrelations between standardized reading tests, teacher's ratings and reading. Journal of Educational Measurement, 1971, 8, 27-32.
- Fairbanks, G. Experimental Phonetics. Urbana: University of Illinois Publication, 1966.
- Fairbanks, G. and Hoaglin, C. An Experimental Study of the Durational Characteristics of the Voice during the Expression of Emotion. Speech Monographs, 1941, 8, 85-91.

- Fairbanks, G. and Pronovast, W. Vocal Pitch during Simulated Emotion. Science, 1938, 88, 382-383.
- Feldhusen, J. F., Thurstone, J. R., Benning, J. J. Longitudinal Analysis of Classroom Behavior and School Achievement. Journal of Experimental Education, 1970, 38, .
- Fesenden, W. E., Jacobson, S., and Linden, N. J. Early identification of Learning Disabilities. Journal of Learning Disabilities, 1970, 3, 589-593.
- Festinger, L. A. A Theory of Social Comparison Processes. Human Relations, 1954, 2, 117-140.
- Fink, M. B. Self Concept as it Relates to Academic Underachievement. California Journal of Educational Research, 1962, 13, 57-62.
- Fisher, B. Group Therapy with Retarded Readers. Journal of Educational Psychology, 1953, 44, 354-360.
- Frauenheim, J. G. Academic Achievement Characteristics of Adult Males who were Diagnosed as Dyslexic in Childhood. Journal of Learning Disabilities, 1978, 11, 21-28.
- Freeman, R. D. Special Education and the Electroencephalogram: Marriage of Convenience. Journal of Special Education, 1967, 2, 61-73.
- Freud, A. Aggression in Relation to Emotional Development: Normal and Pathological. Psychoanalytic Study of the Child, 1949, 111/IV. NY: Int. Universal Press, 37-43.
- Freud, A. Psychoanalysis and Education, The Psychoanalytic Study of the Child, New York International University Press, 1954.
- Freud, S. Civilization and Its Discontents. London: Hogarth Press Limited, 1930.
- Freud, S. The Problem of Anxiety, NY: Norton Press, 1936.
- Frey, D. Science and the Single Case in Counseling Research. The Personnel and Guidance Journal, 1978, 56, 263-268.
- Fries, C. C. Linguistics and Reading, New York: Holt Reinhart and Winston, 1962.
- Fry, M. A., Johnson, C. S. and Muehl, S. Oral Language Production in Relation to Reading Achievement Among Select Second Graders. In D. J. Bakker and D. Satz (Eds). Specific Reading Disability: Advances in Theory and Method. Rotterdam: Rotterdam University Press, 1970.

- Frastig, M. Teaching Reading to Children with Perceptual Disturbances. In R. M. Flowers, H. Gofman and L. Lawson (Eds). Reading Disorders. Philadelphia, Pennsylvania: Davis, 1965.
- Fullerton, W. S. Self-Disclosure, Self-Esteem and Risk Taking, Unpublished Ph. D. Dissertations, University of California, Berkeley, 1972.
- Gann, E. Reading Difficulty and Personality Organization. NY: Kings Crown Press, 1945.
- Gastwirth, J. L. and Cohen, M. L. Small Sample Behavior of Robust Linear Estimates of Location. Journal of the American Statistical Association. 1970, 65, 946-973.
- Gates, A. I. The Role of Personality Maladjustment in Reading Disability. Journal of Genetic Psychology, 1941, 59, 77-85.
- Gates, A. I., and MacGinitie, W. H. Gates-MacGinitie Reading Tests, Columbia University: Teachers College Press, 1965.
- Géarhart, B. R. Learning Disabilities: Educational Strategies. St. Louis: C. V. Mosby, 1973.
- Gendrin. In J. de Ajuriaguerra et H. Hecaen. Le Cortex Cerebral, Masson, 1964, 339.
- Getsinger, S., Kunce, J., Miller D., and Weinberg, S. Self Esteem Measures and Cultural Disadvantage: Journal of Consulting and Clinical Psychology, 1972, 38, 149.
- Gibson, E. J. Experimental Psychology of Learning and Reading. In J. Money (ed). The Disabled Reader, Baltimore: Johns Hopkins Press, 1966.
- Gibson, E. J. Reading for Some Purpose in Language by Ear and by Eye: The Relationship between Speech and Reading. J. F. Kavanagh & I. G. Mattingly (eds). Cambridge, Mass.: M. I. T. Press, 1972, 3-19.
- Gibson, J. J. The Senses Considered as Perceptual Systems. Boston: Houghton Mifflin Company, 1966.
- Glass, G. V., Willson, W. L., and Gottman, J. M. Design and Analysis of Time-Series Experiments. Boulder: University of Colorado Press, 1975.
- Glasser, N. Schools Without Failure. NY: Harper & Rowe, 1969.
- Glauach, M. and Stoner, D. Breaking the Failure Pattern, Journal of Learning Disabilities, 1970, 3, 103-105.

- Glenn, H. N. The Myth of the Label Learning Disabled Child. The Elementary School Journal, 1975, 75, 357-361.
- Glick, O. Some Social-Emotional Consequences of Early Inadequate Acquisition of Reading Skills. Journal of Educational Psychology, 1972, 63, 253-257.
- Gold, L. and Huebner, D. An Investigation of the Incidence of Developmental Dyslexia and Selected Factors Associated with the Condition: Results of a Two Year Study. Paper presented at 15th Annual Convention of the International Reading Association. Anaheim, California, May 1970, ERIC #040828.
- Golden, N. and Steiner, S. R. Auditory and Visual Functions in good and Poor Readers. Journal of Learning Disabilities, 1970, 2, 476-481.
- Goodman, K. S. Reading: A Psycholinguistic Guessing Game in Theoretical Models & Processes of Reading. H. Singer and R. B. Ruddell (eds) Newark Delaware: International Reading Association, 1970.
- Gotterman, R. L. Follow-up Study of Reading Achievement in Learning Disabled Children: Eric, Ed: 155883.
- Gottman, John M. N of One and N of Two Research in Psychotherapy. Psychological Bulletin, 1973, 80, 93-105.
- Gottman, J. M., McFall, R. M., Barnett, J. T. Design and Analysis of Research Using Time-Series. Psychological Bulletin, 1969, 72, 299-306.
- Green, T. M. Self-conceptions, Physical Fitness Factors School Achievement and Their Interrelations with 6th grade students. Dissertation Abstracts, 1971, 31, (6-A), 2713.
- Guralnick, Michael J. The Application of Single-Subject Research Designs to the Field of Learning Disabilities. Journal of Learning Disabilities, 1978, 11, 415-421.
- Hake, J. M. Covert, Motivations of Good and Poor Readers. Reading Teacher, 1969, 22, 731-738.
- Hall, M. D. Family Relationships of Latency Age Boys with Emotionally Based Learning Inhibitions. In. Learning Disorders, Vol. II, Seattle, Washington: Special Child Publications, 1966, 173-191.
- Hallahan, D. P. and Cruickshank, W. M. Psychoeducational Foundations of Learning Disabilities. Englewood Cliffs, N.J.: 1973, IX 8-9.
- Hallahan, D. P. and Kauffman, J. M. Introduction to Learning

- Disabilities: A Psycho Behavioral Approach. Englewood Cliffs, N.J.: Prentice-Hall, 1976.
- Hallock, G. A. Attitudinal Factors Affecting Achievement in Reading. Unpublished Doctoral Dissertations. Wayne State University, Dissertation Abstracts, 1958, 18, 2061.
- Haring, N. G. and Phillips, E. L. Educating Emotionally Disturbed Children. N.Y.: McGraw-Hill, 1962.
- Haring, N. G. and Rigway, R. W. Early Identification of Children with Learning Disabilities. Exceptional Children, 1967, 33, 387-395.
- Harlow, S. D. Special Education, The Meeting of Differences, Grand Forks, North Dakota: Dakota Press, 1976.
- Harris, A. J. Ten Years of Progress in Remedial Reading. Paper presented at International Reading Association Convention. Anaheim, California, May 13, 1976. Erid Ed. 120723.
- Harris, A. Diagnosis and Remedial Instruction in Reading. in Readings on Reading Instruction. (ed) A. Harris, New York: McKay Publishers, 1964, 129.
- Harris, A. How to Increase Reading Ability. New York: David McKay, 1961.
- Harris, A. J. and Roswell, F. G. Clinical Diagnosis of Reading Disability: In Children with Reading Problems, (ed) Gladys Natchez, New York: Basic Books, 1968.
- Harris, A. J. and Sipay, E. R. How to Increase Reading Ability. New York: David McKay Co., 1975.
- Harris, I. D. Emotional Blocks to Learning. New York: The Free Press, 1966.
- Harris, J. G. Validity: The Search for a Constant in a Universe of Variables. in Maria A. Rickers-Ovsiankina (ed) Rorschach Psychology, New York: John Wiley and Sons, 1960, 380-439.
- Hartup, W. W. Peer Interaction and Social Organization, in Charmichael Manual of Child Psychology, Vol. II, Ed. Paul H. Musson, New York, John Wiley and Sons, 1970, 361-456.
- Heckerl, J. R. and Sansbury, R. J. A Study of Severe Reading Retardation, Reading Teacher, 1968, 21, 724-729.
- Hellman, I. Some Observations on Mothers and Children with Intellectual Inhibitions. In R. S. Eissler et al (eds). The Psychoanalytic Study of the Child. New York: International Universities Press, 1954, IX, 259-273.

- Henderson, A. W. The Relationship of Self-Concept of 4th, 5th and 6th Grade Students at Southern University Laboratory School. Dissertation Abstracts, 1975, 36, (1-A), 107-108.
- Henderson, E. H. and Long B. H. Social Self Concepts in Relation to Reading and Arithmetic. In J. A. Figurel (ed) Vistas in Reading. Proceedings of the International Reading Association, 1966, 11, 576-581.
- Hersen, M. and Barlow, D. H. Single Case Experimental Designs. New York: Pergamen Press, 1976.
- Hewitt, F. M. and Forness, S. R. Education of Exceptional Learners. Boston: Allyn and Bacon, 1974.
- Hinshelwood, J. Congenital Word - Blindness. London: Lewis Ltd., 1917.
- Hochberg, J. and Brooks, V. Reading as Intentional Behavior. In Theoretical Models and Processes of Reading. H. Singer and R. B. Ruddell (eds) Newark, Delaware: International Reading Association, 1970.
- Hoffman, J. V. The Disabled Reader: Forgive Us Our Regressions and Lead Us Not Into Expectations. Journal of Learning Disabilities, 1980, 13, 7-11.
- Holmes, J. A. Personality and Spelling Ability. Berkeley: University of California Publications in Education, 1959, 12, 213-292.
- Holmes, J. A. Factors Underlying Major Reading Disability at the College Level. Genetic Psychological Monographs, 1954, 49, 3-95.
- Holmes, J. A. The Sub-strata Factor Theory: Some Experimental Evidence. New Frontiers in Reading. Proceedings of the 5th Annual Conference and International Reading Association, 1960.
- Holmes, J. A. The Brain and the Reading Process. In Clairmont College Reading Conference. 22nd Yearbook, Clairmont, California: Clairmont College Curriculum Laboratory, 1957, 49-67.
- Holmes, J. A. Personality Characteristics of the Disabled Reader. Journal of Developmental Reading. 1961, 4, 111-122.
- Holzberg, J. D. Reliability Re-Examined in Rorschach Psychology, Maria A. Rickers - Ovsiankina (ed). Huntington, New York: Robert E. Krieger Publishing Company, 1977, 555-574.
- Howden, M. E. A Nineteen Year Follow-Up Study of Good, Average and Poor Readers in the Fifth and Sixth Grades. Unpublished

Doctoral Dissertations, University of Oregon. Dissertation Abstracts, 1967, 29A (1-2), 63.

- Hunter, E. J. and Lewis, H. M. The Dyslexic Child - Two Years Later. Journal of Psychology, 1973, 83, 163-170.
- Ilg, F. L. and Ames, L. B. School Readiness. New York: Harper and Row, 1964.
- Ilg, L., Ames, L. B. and Apell, R. J. School Readiness as Evaluated by Gesell Developmental Visual and Projective Tests. Genetic Psychological Monographs, 1965, 71, 61-91.
- Jackson, E. Developmental Alexia. American Journal of Medical Society, 1906.
- Jackson, J. A Survey of Psychological, Social and Environmental Differences Between Advanced and Retarded Readers. Journal of Genetic Psychology, 1944, 65, 113-131.
- Jansky, J. and de Hirsch, K. Preventing Reading Failure. New York: Harper and Row, 1972.
- Jastak, J. F. and Jastak, S. R. The Wide Range Achievement Test. Wilmington: Guidance Associates, 1965.
- Jeffrey, D. B. Self-Control: Methodological Issues and Research Trends. In M. J. Mahoney and C. E. Thoresen (Eds) Self-Control: Power to the Person. Monterey, California: Brooks, Cole Publishers, 1974, 166-193.
- Jersild, A. F. In Search of Self. New York: Bureau of Publications, Teachers College Press, Columbia University, 1952.
- Johnson, D. and Myklebust, H. Learning Disabilities: Educational Principles and Practice. New York: Grune and Stratton, 1967.
- Jones, R. R., Vaught, R. S. and Weinrate, M. Time-series Analysis in Operant Research. Journal of Applied Behavioral Analysis, 1977, 10, 151-166.
- Jung, C. G. The Portable Jung, New York, The Viking Press, 1971.
- Kagan, J. and Moss, H. A. The Stability of Passive and Dependent Behavior From Childhood Through Adulthood. Child Development, 1960, 31, 577-591.
- Kasdon, L. M. Causes of Reading Difficulties Facts and Fiction Paper Presented at Perspective Conference: The Parent and Reading. I. R. A. Convention, Kansas City, Missouri, April 1961, Eric # Ed 034669.

- Kauffman, J. M. and Hallahan, D. P. (ed). Teaching Children with Learning Disabilities: Personal Perspectives. Columbus, Ohio: Charles. E. Merrill, 1976.
- Kazdin, A. E. Research Design in Clinical Psychology, New York: Harper and Row, 1980.
- Kazdin, A. E. Statistical Analysis for Single-Case Experimental Designs. In M. Hersen and D. H. Barlow (Eds). Single Case Experimental Designs: Strategies for Studying Behavior Change. New York: Pergamen Press, 1976.
- Kellam, S. G., Branch, J. D. and Agrawal, K. C. Mental Health and Going to School. Chicago: University of Chicago Press, 1975.
- Keagh, B. K. and Smith, C. E. Early Identification of Educationally High Potential and High Risk Children. Journal of School Psychology, 1970, 8, 285-290.
- Kephart, N. C. The Slow Learner in the Classroom. Columbus, Ohio: Merrill Publishers, 1971.
- Kerlinger, F. N. Foundations of Behavioral Research. New York: Holt, Rinehart and Winston 1964.
- Kermonian, S. B. Teacher Appraisal of First Grade Readiness. Elementary English, 1962, 39, 196-201.
- Kiesler, D. J. Experimental Designs in Psychotherapy Research. In A.E. Bergin and S. L. Garfield. (Eds). Handbook of Psychotherapy and Behavior Change: An Empirical Analysis. New York: John Wiley and Sons, 1971, 36-74.
- Kifer, E. Relationships Between Academic Achievement and Personality Characteristics: A Quasi-Longitudinal Study. American Educational Reserach Journal, 1975, 12, 191-210.
- Kirk, S. A. In Learning Disability Another Name for Educational Retardation. Paper presented at First National Conference on Learning Disabilities. Hotel Skyline, Ottawa, Canada, October 26-28, 1977.
- Klasen, E. The Syndrome of Specific Dyslexia. Baltimore: University Park Press, 1972.
- Klopfer, W. G. Integration of Projective Techniques in the Clinical Case Study. In A. I. Rabin (Ed) Projective Techniques in Personality Assessment. New York: Springer Publishing Company, 1968, 523-552.
- Koenig, C. Charting the Future Course of Behavior, Kansas City: Precession Media, 1972.

- Kohn, M. and Rosman, B. Social, Emotional, Cognitive and Demographic Determinants of Poor School Achievement. Journal of Educational Psychology, 1974, 66, 267-276.
- Kolson, C. J. and Kaluger, G. Clinical Aspects of Remedial Reading. Springfield, Illinois: Charles C. Thomas, 1963.
- Koppitz, E. M. Children with Learning Disabilities - A Five Year Follow-up Study. New York: Grune and Stratton, 1971.
- Kratochwill, Thomas R. and Levin, Joel R. What Time-Series Designs May Have to Offer Educational Researchers. Contemporary Educational Psychology, 1978, 3, 273-329.
- Kronick, D. The Importance of a Sociological Perspective Towards Learning Disabilities. Journal of Learning Disabilities, 1976, 9, 115-119.
- Kroth, R. Communicating with Parents of Exceptional Children. Denver: Love Publishing, 1975.
- Kugle, C. L. and Clements, R. O. Self-Esteem and Academic Behavior Among Second Graders. Paper presented at the American Educational Research Association, Boston, Massachusetts: 4/1980.
- Kusmaul, A. Les Troubles de la Parole. Paris: Trad. Francaise, 1884.
- Labelle, T. J. Attitudes and Academic Achievement Among Male and Female Anglo and Spanish American 5th Grade Students. Dissertation Abstracts, 1970, 31, (4-A), 1624.
- Lackenmeyer, C. W. Experimentation: A Misunderstood Methodology in Psychological and Social Psychological Research. American Psychologist, 1970, 25, 617-624.
- Lambert, N. M. Behavioral Definers of Reading Achievement. Paper presented at Annual Meeting of American Educational Research Association, New York City,, April 1977, Eric Ed 144036.
- Lambert, N. M., Hartsough C. S., and Zimmerman, I. L. Comparative Predictive Efficiency of Intellectual and Nonintellectual Components of High School Functioning. American Journal of Orthopsychiatry, 1976, 46, 109-122.
- Lambert, N. M. Intellectual and Nonintellectual Predictors of High School Status. The Journal of Special Education, 1972, 6, 247-259.
- Lamy, M. W. Relationship of Self-Perceptions of Early Primary Children to Achievement in Reading. In I. J. Gordon (Ed) Human Development: Readings in Research. Chicago: Scott, Foresmann Publishers, 1965.

Lazarus, A. Group Therapy of Phobic Disorders by Systematic Desensitization. Journal of Abnormal and Social Psychology, 1961, 63, 505-510.

Lazarus, A. A. and Davison, G. Clinical Innovations in Research and Practice. In A. E. Bergen and S. L. Garfield (Eds) Handbook of Psychotherapy and Behavior Change. New York: Wiley, 1971. 196-216.

Leary, Timothy Interpersonal Diagnosis of Personality. New York: The Ronald Press Company, 1957.

Lecky, P. Self-Consistency: A Theory of Personality. New York: Island Press, 1945.

Lerner, J. W. Children with Learning Disabilities. Boston: Houghton Mifflin, 1976.

Lerner, J. Dyslexia or Reading Disability: A Thorne by any Name. Paper presented at Association for children with Learning Disabilities. Fort Worth, Texas: March 6-8, 1969. Eric # ED. 028911.

Levitt, E. E. and Truuma, A. The Rorschach Technique with Children and Adolescents, New York: Grune and Stratton, 1972.

Lewis, M. M. Language, Thought, and Personality in Infancy and Childhood. London: George G. Harrap, 1963.

Lewis, R. W. The Relationship of Self-Concept to Reading Achievement. Dissertation Abstract. 1974, 34, (7-A) 3839.

Love, H. D. Parental Attitudes Toward Exceptional Children. Springfield, Illinois: Charles C. Thomas, 1970.

Lovell, K. A Study of Some Cognitive and Other Disabilities in Backward Readers of Average Intelligence As Assessed by a Non-Verbal Test. British Journal of Educational Psychology, 1964, 38, 240-248.

Lovell, K., Byrne, C., Richardson, B. A Further Study of the Educational Progress of Children Who Had Received Remedial Education. British Journal of Educational Psychology, 1963, 33, 3-9.

Luria, A. R. Higher Cortical Functions in Man. New York: Basic Books, 1966.

Luria, A. R. The Origin and Cerebral Organization of Man's Conscious Action in Children With Learning Problems. Ed. Sapir, S. G. and Nitzburg, A. C. New York: Brunner Mazel, 1973.

- Luria, A. R. and Yudovich, F. I. Speech and the Developmental of Mental Processes. London: Pergamon Press, 1959.
- Lykken, D. T. Statistical Significance in Psychological Research. Psychological Bulletin. 1968, 70, 151-157.
- Lyon, R. Auditory-Perceptual Training: The State of the Art. Journal of Learning Disabilities, 1977, 10, 35-43.
- Macmillan, D. L. and Forness, S. R. Behavior Modification: Limitations and Liabilities. Exceptional Children, 1970, 37, 291-297.
- MacGinitie, W. H. Auditory Perception in Reading. Education, 1967, 87, 532-538.
- Mahler, M. S. On Human Symbiosis and the Vicissitudes of Individuation: Volume 1, Infantile Psychosis. New York: International Universities Press, Inc. 1968.
- Mahler, M. S., Pine, F., Bergman, A. The Psychological Birth of the Human Infant. New York: Basic Books, 1975.
- Malamquist, E. Factors Related to Reading Disabilities in the 1st Grade of the Elementary School. Acta Universitatis Stockholmiensis. Stockholm Studies in Ed. Psych. #2. Stockholm: Almqvist and Wiksell, 1958.
- Manjo, A. U. and Duffelmeyer, F. Dyslexia: Toward Semantical Clarification. Unpublished Study prepared at University of Missouri, Division of Reading Education, Kansas City: 1975, Eric # Ed. 119140.
- Margulies, H. Rorschach Responses of Successful and Unsuccessful Students. Archives of Psychology, 1942, #271.
- Markel, N., Meisels, M. and Hauck, J. Judging Personality for Voice Quality. Journal of Abnormal and Social Psychology, 1964, 69, 458-463.
- Mattingly, I. G. Reading the Linguistic Process and Linguistic Awareness. In J. F. Kavanagh and I. G. Mattingly (Eds). Language by Ear and by Eye: The Relationship Between Speech and Reading. Cambridge: M.I.T. Press, 1972, 133-147.
- McCall, R. B., Appelbaum, M. I. and Hogarty, P. S. Developmental Changes in Mental Development. Monographs for the Society for Research in Child Development, 1973, 38, (3 serial #150).
- McCarthy, D. A. Language Development in Children. In L. Carmichael (ed). Manual of Child Psychology, New York: Wiley, 1954, 492-630.

- McDavid, J. Some Relationships Between Social Reinforcement and Scholastic Achievement. Journal of Consulting Psychology, 1959, 23, 151-154.
- McGinley, P. and McGinley, H. Reading Groups as Psychological Groups. Journal of Experimental Education, 1970, 39, p. 35-42.
- McLeod, J. Psychological and Psycholinguistic Aspects of Severe Reading Disabilities in Children: Some Experimental Studies. International Approach to Learning Disabilities of Children and Youth. Conference of the Association of Children with Learning Disabilities, 1966, 186.
- McLoughlin, J. A., Edge, D. and Strenecky, B. Perspective in Parental Involvement in the Diagnosis and Treatment of Learning Disabled Children. Journal of Learning Disabilities, 1978, 11, 32-37.
- McMichael, P. Reading Difficulties, Behavior, and Social Status. Journal of Educational Psychology, 1980, 72, 76-86.
- Meier, J. H. Prevalence and Characteristics of Learning Disability found in Second Grade Children. Journal of Learning Disabilities, 1971, 4, 1-21.
- Meredith, P. Dyslexia and the Individual, London: Elm Tree Books, 1972.
- Meyer, G. Some Relationships Between Rorschach Scores in Kindergarten and Reading in the Primary Grades. Journal of Projective Techniques, 1953, 17, 414-425.
- Michael, J. Statistical Inference for Individual Organism Research: Mixed Blessing or Curse. Journal of Applied Behavioral Analysis, 1974, 7, 647-653.
- Mirmow, El. The Rosenzweig Picture-Frustration Study. In. D. Brower and L. E. Abt (Eds). Progress in Clinical Psychology, 1, New York: Grune and Stratton, 1952.
- Money, J. The Disabled Reader: Education of the Dyslexic Child, Baltimore: Johns Hopkins Press, 1966.
- Mook, B. Rorschach Rating Scales for Children. Unpublished Paper. University of Ottawa, 1977.
- Muehl, S., and Forell, E. R. A Followup Study of Disabled Readers: Variabled Related High School Reading Performance. Reading Research Quarterly, 1973-1974, 9, 110-123.
- Mullaphy, P. The theories of Harry Stack Sullivan, In P. Mullaphy (ed.), The Contributions of Harry Stack Sullivan, New York: Hermitage House, 1952.

- Myers, P. and Hammill, D. D. Methods for Learning Disabilities, New York: Wiley Press, 1976.
- Myklebust, H. R. The Psychology of Deafness, New York: Grune and Stratton, 1964.
- Myklebust, H. R. Learning Disabilities: Definition and Overview in H. R. Myklebust (ed), Progress in Learning Disabilities, Vol. 1, New York: Grune and Stratton, 1968.
- Myklebust, H. R. The Pupil Rating Scale, New York: Grune and Stratton, 1971.
- Natchez, G. Oral Reading Used As An Indicator of Reactions to Frustration. Journal of Educational Research, 1961, 54, 308-311.
- National Advisory Committee on Handicapped Children. Special Education for Handicapped Children First Annual Report. Washington, D. C.: U. S. Department of Health, Education and Welfare, January 31, 1968.
- Newman, A. P. Later Achievement Study of Pupils Underachieving in Reading in First Grade. Reading Reserach Quarterly, 1972, 7, 477-508.
- Oakland, T. D. Auditory Discrimination and Socioeconomic Status as Correlater of Reading Ability. Journal of Learning Disabilities, 1969, 2, 324-329.
- Orton, S. T. Reading, Writing and Spelling Problems in Children. New York: W. W. Norton Press, 1937.
- Ostwald, P. Soundmaking: The Acoustic Communication of Emotion. Springfield, Illinois: Charles Thomas, 1963.
- Owens, F. W., Adams, P. A., Forrest, T., Stolz, L. M., and Fisher, S. Learning Disorders in Children: Sibling Studies. Monographs of the Society for Research in Child Development, 1971, 36, Serial #144.
- Ozehosky, R. Children's Self-Concepts and Kindergarten Achievement. Dissertation Abstracts, 1967, 28, p. 1308.
- Paine, R. S., Werry, J. S. and Quay, H. C. A Study of Minimal Cerebral Dysfunction. Developmental Medicine and Child Neurology, 1968, 10, 505-520.
- Paris, S. and Carter, A. Semantic and Constructive Aspects of Sentence Memory in Children. Developmental Psychology, 1973, 9, 109-113.
- Paschal, B. The Role of Self-Concept in Achievement. Journal of Negro Education, 1968, 37, 392-396.

- Paul, G. L. Insight Versus Desensitization in Psycho-Therapy: An Experiment in Anxiety Reduction. Stanford: Stanford University Press, 1966.
- Paul, G. L. Behavior Modification Research: Design and Tactics. In C. M. Franks (Eds). Behavior Therapy: Appraisal and Status, New York: McGraw Hill, 1969.
- Pearson, G. H. J. and English, O, S. Common Neurosis of Children and Adults. New York: Norton Press, 1937.
- Perfetti, C. A. and Hogaboam, T. The Relationship Between single Word Decoding and Reading Comprehension Skill. Journal of Educational Psychology, 1975, 67, 461-469.
- Perkins, Williams Vocal Functions-A Behavioral Analysis. In Handbook of Speech Pathology, Lee Travis (Ed). New York: Appleton Century Crafts, 1957.
- Pihl, R. O. and Nagy, K. A. The Applicability of the Myklebust Pupil Rating Scale. Journal of Learning Disabilities, 1980, 13, 58-62.
- Piaget, Jean The Language and Thoughts of the Child. New York: Mendicum Publishers, 1955.
- Piaget, J. The Construction of Reality in the Child. New York: Basic Books, 1964.
- Piotrowski, Z. A. Perceptanalysis, Philadelphia, Ex Libris, 1974.
- Pimm, J. B. and McClure, G. A. A Screening Device for Early Detection of Emotional Disturbance in a Public School Setting. Exceptional Children, 1967, 33, 647-648.
- Puce, L. G. The Trouble With Poor Auditory Discrimination. Academic Therapy, 1973, 8, 331-338.
- Rabinovitch, R. D. Reading Problems in Children: Definitions and Classifications in Dyslexia-Diagnosis and Treatment of Reading Disorders (ed). Keeney, A. H. and Keeney, V. T., St. Louis, Missouri: C. V. Mosby, 1968, 1-10.
- Rabinovitch, R. D. Dyslexia: Psychiatric Consideration. In Reading Disability (ed). J. Movey. Baltimore: Johns Hopkins Press, 1962.
- Rabinovitch, R. D., Drew, A. L., De Jong, R. N., Ingram, W., and Withey, L. A Reason Approach to Reading Retardation. In Childhood Psychopathology (ed) Saul I. Harrison and John F. McDermott. New York: International Universities Press, 1972.
- Ramsey, W. A Study of Salient Characteristics of Pupils of High and

- Low Reading Ability. Journal of Developmental Reading, 1962, 5, 87-94.
- Rasmussen, G. R., Dunne, H. W. A Longitudinal Evaluation of a Junior High Corrective Reading Program. The Reading Teacher, 1962, 16, 95-101.
- Raygor, A. L. and Wark, D. M. Personality Patterns of Poor Readers Compared with College Freshman. Journal of Reading, 1964-1965, 8, 40-46.
- Redmount, R. Description and Evaluation of a Corrective Program for Reading Disability. Journal of Educational Psychology, 1948, 39, 347-358.
- Reed, D. W. A Theory of language, Speech and Writing in Priscilla Tyler (ed). Linguistics and Reading. Highlights of the 1965 Preconvention Institutes. Newark, Delaware: International Reading Association, 1966, 4-25.
- Reed, J. C., Rabe, E. F. and Mankinen, M. Teaching Reading to Brain-Impaired Children: A Resource. Reading Research Quarterly, 1970, 5, 379-401.
- Reider, T. A. A Study of Some Relationships Between Levels of Self-Confidence, Academic Achievement and Classroom Adjustment. Dissertation Abstracts, 1955, Volume 15.
- Rollie, Allen An Investigation of the Discriminatory Ability of a New Rorschach Rating System Among Three Age Groups of Children. Unpublished Masters Thesis. Ottawa: University of Ottawa, 1981.
- Rogers, C. Client-Centered Therapy. New York: Houghton-Mifflin, 1951.
- Rosenzweig, S. An Investigation of the Reliability of the Rosenzweig Picture-Frustration Study, Children's Form. Journal of Personality Assessment, 1978, 42, 483-488.
- Rosenzweig, S. and Adelman, S. Construct Validity of the Rosenzweig Picture-Frustration Study. Journal of Personality Assessment, 1977, 41, 578-588.
- Ross, A. L. Psychological Aspects of Learning Disabilities and Reading Disorders. New York: McGraw Hill Book Company, 1976.
- Rourke, B. Brain-Behavior Relationships in Children with Learning Disabilities. American Psychologist, 1975, 30, 911-920.
- Rousey, C. and Morioritz, A. Diagnostic Implications of Speech Sounds. Springfield, Illinois: Charles C. Thomas, 1965.

- Ruddell, Robert B., and Graves, Barbara W. Socioethnic Status and the Language Achievement of First Grade Children. Elementary English, 1967, 730-739.
- Rushton, J. The Relationship between Personality Characteristics and Scholastic Success in Eleven Year Old Children. British Journal of Educational Psychology, 1966; 36, 178-184.
- Rutter, M. and Yule, W. The Concept of Specific Reading Retardation. Journal of Child Psychological Psychiatry, 1975, 16, 181-197.
- Sabatino, D. A. and Becker, J. T. Relationship Between Lateral Preference and Selected Behavioral Variables for Children Failing Academically. Child Development, 1971, 42, 2055-2060.
- Samuels, S. J. Success and Failure in Learning to Read: A Critique of the Research. Reading Research Quarterly, 1973, 8, 200-239.
- Sargent, H. D. Intrapsychic Change: Methodological Problems in Psychotherapy Research. In G. E. Stollak, B. G. Guernsey, Jr. and M. Rothbert (eds). Psychotherapy Research, Chicago: Rand McNally Company, 1966, 14-31.
- Satyan, H. S. Management of Children with Reading Difficulties: A Multidisciplinary Approach. Journal of Learning Disabilities, 1980, 13, 30-34.
- Satz, P., Taylor, H. G., Friel, J., Fletcher, J. Some Developmental and Predictive Processors of Reading Disabilities: A Six Year Follow-up. In A. B. Benton, D. E. Pearl (eds) Dyslexia: An Appraisal of Current Knowledge, New York: Oxford University Press, 1978.
- Satz, P. and Van Nashed, G. K. Developmental Dyslexia: An Evaluation of a Theory. In P. Satz and J. Ross (eds). The Disabled Learner: Early Detection and Intervention. Rotterdam, The Netherlands: Rotterdam University Press, 1973, 121-148.
- Schacht, L. S., Kass, W., Schacht, M. Personality Development and Learning Disabilities: Long Term Follow-up of Psychotherapeutic Remediation. Paper presented at Third International Congress of International Federation of Learning Disabilities. Montreal, Canada: August 9, 1976. ERIC Reports ED 123-135.
- Schachtel, E. G. Experiential Foundations of Rorschach's Test. New York: Basic Books, Inc., 1966.
- Schmitt, C. Developmental Alexia: Congenital Word-Blindness, or Inability to Read. Elementary School Journal, 1918, 18, 680-700, 757-769.

- Schroeder, L. B. A Study of the Relationship Between Five Descriptive Categories of Emotional Disturbance and Reading and Arithmetic Achievement. Exceptional Children, 1965, 32, 111-112.
- Seigler, H. G., and Gynther, M. D. Reading Ability of Children and Family Harmony. Journal of Developmental Reading, 1960, 4, 17-24.
- Sears, P. S. and Sherman, V. S. In Pursuit of Self-Esteem, Belmont: Wadsworth Publishing Company, 1964.
- Serf, G. M. An Information Integration Theory and its Application to Normal Reading Acquisition and Reading Disability. In N. D. Bryant and C. E. Kass (eds). Leadership Training Institute in Learning Disabilities: Final Report, Volume 2, Tuscan, Arizona: University of Arizona, 1972, 305-391.
- Shapiro, M. B. The Single Case in Clinical-Psychological Research. Journal of Genetic Psychology, 1966, 74, 3-23.
- Shaw, M. C. and Alves, G. S. The Self-Concept of Bright Academic Underachievers. Personnel and Guidance Journal, 1963, 42, 401-403.
- Shaw, M. C., Edson, K. and Bell, R. M. The Self-concept of Bright Underachieving High School Students as Revealed by an Adjective Check List. Personnel and Guidance Journal, 1960, 39, 193-196.
- Sheffe, H. The Analysis of Variance. New York: Wiley, 1959.
- Shelton, M. N. Affective Education and the Learning Disabled Student. Journal of Learning Disabilities, 1977, 10, 23-29.
- Shine, L. C. Five Research Steps Designed to Integrate the Single Subject and Multi-Subject Approaches to Experimental Research. Canadian Psychological Review, 1975, 16, 3.
- Shantz, F. C. Research Methods in Personality. New York: Appleton Century-Crafts, 1965.
- Shrades, C. Bibliotherapy a Theoretical and Clinical Experimental Study. Unpublished Dissertation Abstracts, University of California: 1949. Dissertation Abstracts, W1950, p.111.
- Sidman, M. Tactics of Scientific Research. New York: Basic Books, 1960.
- Silberberg, N. E., and Silberberg, M. C. The Bookless Curriculum: An Educational Alternative. Journal of Learning Disabilities, 1969, 2, 302-307.

- Silberman, C. E. Crisis in the Classroom. New York: Random House, 1970.
- Simon, W. Some Sociometric Evidence for Validity of Coopersmith's Self-Esteem Inventory. Perceptual and Motor Skills, 1972, 34, 93-94.
- Simon, W. E. and Bernstein, E. The Relationship Between Self-Esteem and Perceived Reciprocal Liking: A Sociometric Test of the Theory of Cognitive Balance. Journal of Psychology, 1971, 79, 197-201.
- Simon, W. E. and Simon, M. G. Self-Esteem, Intelligence and Standardized Academic Achievement. Psychology in the Schools, 1975, 12, 97-100.
- Smith, N. M. The Relationship Between the Rorschach Whole-Response and Level of Cognitive Functioning. Journal of Personality Assessment, 1981, 45, 13-19.
- Smygg, D. and Combs, A. W. Individual Behavior: A New Frame of Reference for Psychology. New York: Harper and Brothers Publishers, 1949.
- Spache, G. Personality Patterns of Retarded Readers. Journal of Educational Research, 1956-57, 50, 461-469.
- Spache, G. D. Diagnosing and Correcting Reading Disabilities. Boston: Allyn and Bacon, Inc., 1976.
- Spicola, R. F. An Investigation into 7 Correlates of Reading Achievement Including the Self-Concept. Unpublished Doctoral Dissertations, Florida State University, Dissertation Abstracts, 1960, 2, 1108-2199.
- Spitz, R. A. The First Year of Life. New York: International Universities Press, 1965.
- Spitzer, R. L. Chairperson, Task Force on Nomenclature and Statistics, DSM III. The American Psychiatric Association, 1980, 41-45.
- Starkweather, H. Vocal Communication of Personality and Human Feelings. Journal of Communication, 1961, 7, 63-72.
- Spreen, O. The Dyslexias: A Discussion of Neurobehavioral Research in Dyslexia. A. Benton and D. Pearl (ed), New York: Oxford University Press, 1980, 175-194.
- Stavrianos, B. K. and Landsman, S. C. Personality Patterns of Deficient Readers with Perceptual Motor Problems. Psychology in the Schools, 1969, 6, 109-123.

Stedman's Medical Dictionary, Baltimore, Maryland: Williams and Wilkins Company, 1976.

Stevens, P. H. An Investigation of the Relationship between Certain Aspects of Self-Concept Behavior and Students Academic Achievement. Dissertation Abstracts, 1956, 16.

Stevens, D. O. Reading Difficulty and Classroom Acceptance. The Reading Teacher, 1971, 25, 52-55.

Stewart, R. S. Personality Maladjustment and Reading Achievement. American Journal of Orthopsychiatry, 1950, 20, 410-417.

Stott, D. H. Behavioral Aspects of Learning Disabilities: Assessment and Remediation. 1971, ERIC, #ED049582.

Strachey, J. Some Unconscious Factors in Reading. International Journal of Psychoanalysis, 1930, 11, 322-331.

Strang, R. Diagnosis and Remediation in Reading and General Education, an Exploratory Study in W. S. Gray (ed) American Council on Education, Washington, D. C.: 1940, 307-356.

Stuckey, A. J. Self-Concept of Elementary School Students as Related to Grade Level, Patterns of Decrease and Reading Achievement. Dissertation Abstracts, 1975, 36, (3-A), 1281-1282.

Sylvester, E. and Kunst, M. S. Psychodynamic Aspects of the Reading Problem. American Journal of Orthopsychiatry, 1943, 13, 69-76.

Tabarlet, B. E. A Study of Mental Health Status of Retarded Readers. Unpublished Doctoral Dissertations, Louisiana State University, Dissertation Abstracts, 1958, 19, 735.

Taylor, L. and Reitz, W. The Three Faces of Self-Esteem Department of Psychology, University of Western Ontario, Research Bulletin #80, April 1968.

Thayer, J. A. Johnny Could Read-What Happened. Journal of Reading, 1970, 13, 501-506.

Thoresen, C. Making Better Science, Intensively. The Personnel and Guidance Journal. 1978, 56, 279-282.

Thoresen, Carl E. and Anton, Jane L. Intensive Experimental Research in Counseling. Journal of Counseling Psychology, 1974, 21, 553-559.

Thoresen, C. E. and Elashoff, J. D. An Analysis of Variance Model for Intrasubject Replication Design: Some Additional Comments. Journal of Applied Behavioral Analysis, 1974, 7, 639-641.

- Tinker, K. J. The Role of Laterality in Reading Disability in J. A. Figural (ed), Reading and Enquiry, Delaware: International Reading Association, 1965.
- Tomatis, A. Dyslexia. Ottawa, Ontario: University of Ottawa Press, 1969.
- Tomatis, A. Education et Dyslexie. Paris, France: Les Editions ESF, 1972.
- Tomatis, A. Education and Dyslexia, Switzerland: AIAPP, 1978.
- Torgesen, J. K. The Role of Nonspecific Factors in the Task Performance of Learning Disabled Children: A Theoretical Assessment. Journal of Learning Disabilities, 1977, 10, 27-34.
- Trieschman, R. B. Undifferentiated handedness and Perceptual development in children with reading problems. Perceptual and Motor Skills, 1968, 27, 1123-1134.
- Tulcher, S. Emotional Factors in Reading Disabilities in School children. Journal of Educational Psychology, 1935, 26, 443-454.
- Underwood, B. Psychological Research, New York: Appleton-Century Crafts Inc., 1957.
- Variot et Lecomte. Un cas de typhologie congenitale Bull. Soc. Med. Hop. Paris: 1906, 23.
- Vellutino, F. R. Alternative Conceptualizations of Dyslexia: Evidence in Support of a Verbal Deficit Hypothesis. Harvard Educational Review, 1977, 47, 334-354.
- Veltert, H. R. Some Personality Correlates of Reading Disability. Unpublished Doctoral Dissertation. Stamford University. Dissertation Abstracts, 1956, 16/10-12, 1947.
- Vernon, M. Backwardness in Reading. London: Cambridge University Press, 1957.
- Vorhaus, P. G. Rorschach Configurations Associated with Reading Disability. Journal of Projective Techniques. 1952, 16, 3-19.
- Vygotsky, L. S. Thought and Language. Cambridge, Massachusetts: MIT Press, 1962.
- Waldrop, M. F. and Halverson, C. F. Intensive and Extensive Peer Behavior. Child Development, 1975, 46, 19-26.
- Wallace, G. and McLoughlin, J. Learning Disabilities: Concepts and Characteristics. Columbus, Ohio: Charles E. Merrill, 1975.

- Wallach, G. P. and Goldsmith, S. C. Language-Based Learning Disabilities: Reading is Language Too. Journal of Learning Disabilities, 1977, 10, 57-62.
- Walsh, A. M. Self-Concepts of Bright Boys with Learning Difficulties. New York Bureau of Publications: Teachers College, Columbia University, 1956.
- Wattenberg, W. W. and Clifford, C. Relation of Self-Concept to Beginning Achievement in Reading. Child Development, 1964, 35, 461-467.
- Werner, Heinz. Comparative Psychology of Mental Development. New York: International Universities Press, 1948.
- Werner, Heinz and Kaplan, Bernard. Symbol Formation. New York: John Wiley and Sons, Inc., 1963.
- Werner, E. E. and Bachtold, L. M. Personality factors of gifted boys and girls in middle childhood and adolescence. Psychology in the Schools, 1969, 6, 177-182.
- Wertsch, J. V. From Social Interaction to Higher Psychological Processes: A Classification and Application of Vygotsky's Theory. Human Development, 1979, 22, 1-22.
- West, M., Carlin, M., Baserman, G., Milstein, M. An Intensive Therapeutic Program for Learning Disabled Prepubertal Children. Journal of Learning Disabilities, 1978, 11, 56-59.
- White, O. R. A Manual for the Calculation and Use of the Median Slope: A Technique of Progress Estimation and Prediction in the Single Case. Working Paper #16. Regional Resource Center for Handicapped Children. Eugene, Oregon: University of Oregon, 1972.
- White, O. R. Pragmatic Approach to the Progress in the Single Case. Unpublished Doctoral Dissertation. University of Oregon, 1971.
- White, R. Motivation Recommended: The Concept of Competance. Psychological Review, 1959, 66, 297-333.
- Wiig, E. H. and Semel, E. M. Learning Disabled Children have Poor Social Perception. In Language Disabilities in Children and Adolescents, Columbus, Ohio: Charles E. Merrill Pub., 1976.
- Williams, R. L. and Cole, S. Self-Concept and School Adjustment. Personnel and Guidance Journal, 1968, 46, 478-488.
- Winkler, R. C., Teigland, J. J., Munger, P. F., Kranzler, G. D. The Effects of Selected Counseling and Remedial Techniques on Underachieving Elementary School Children. Journal of Counseling Psychology, 1965, 12, 384-387.

- Wolf, C. W. Psychoneurological and Educational Characteristics of Specific Dyslexia. In D. Knowlton and B. Kratoville (eds) Ideas for Action Proceeding of the 14th Convention of the Texas Association for Children with Learning Disabilities. Houghton, Texas: 1969.
- Wolff, G. Kongenitale Worthliwdheit. Dent Med. Woehschr., 1916, 16.
- Wolpe, J. Psychotherapy by Reciprocal Inhibition. Stanford: Stanford University Press, 1958.
- Wolpe, J. The Systematic Desensitization Treatment of Neurosis. Journal of Nervous and Mental Diseases. 1961, 112, 189-203.
- Wolpert. Die Simultanagosie Storung der Gesamtauffassung Zeitschr. f. d. ges. Neurol. U Psychiatr, 1924, 93, 397-415.
- Wong, B. The Role of Theory in Learning Disabilities Research. Part I. An Analysis of Problems. Journal of Learning Disabilities, 1979, 12, 19-29.
- Wood, N. E. Language Disorders in Children. National Society for Crippled Children and Adults. Chicago, 1959.
- Yeaton, W. H. and Sechrest, L. Critical Dimensions in the Choice and Maintenance of Successful Treatments: Strength, Integrity and Effectiveness. Journal of Consulting and Clinical Psychology, 1981, 49, 156-167.
- Ziller, R., Hagey, J., Smith, M. D. and Long, B. Self-Esteem: A Self-Social Construct. Journal of Consulting and Clinical Psychology, 1969, 33, 84-95.
- Zimet, S. A., Rose, C. and Camp, B. W. Relationship Between Reading Achievement and the Rosenzweig Picture-Frustration Study in Early Grades. Psychology in the Schools, 1973, 10, 433-436.

Additional Bibliography

375-A

- Bakker, D.J. Sensory dominance in normal and backward readers. Perceptual Motor Skills, 1966, 23, 1055.
- Bakker, D.J. Ear asymmetry with monaural stimulation: Task influences. Cortex, 1969, 5, 36.
- Bakker, D.J., Smink, T., and Reitsma, P. Ear dominance and reading ability. Cortex, 1973, 9, 123.
- Eisenberg, R.B., Auditory Competence In Early Life. University Park Press, Baltimore, 1976.
- Evans, J., Evoked Potentials and Learning Disability, in Brain Function and Reading Disability, L. Tarnopol and M. Tarnopol (Eds). University Park Press, Baltimore, 1977, 77-110.
- Gacek, R.R., Neuroanatomy of the Auditory System, in Foundations of Modern Auditory Theory, J.V. Tobias (Ed), Academic Press, N.Y., 1977.
- Hartlage, L.C., & Hartlage, P.L., Application of Neuropsychological principles in the diagnosis of learning disabilities, in Brain Function and Reading Disability, Tarnopol and Tarnopol (Eds), University Park Press, Baltimore, 1977, 111-146.
- Satz, P., & Van Nostrand, K., Developmental dyslexia, in P. Satz and J.J. Ross (Eds) The Disabled Learner, Rotterdam University Press, Rotterdam, 1972, 121-148.
- Segalowitz, S.J., & Gruber, F.A., Language Development and Neurological Theory. Academic Press, N.Y., 1977.
- Sparrow, S.S., & Satz, P. Dyslexia, laterality and neuropsychological development, in Specific Reading Disability, D.J. Bakker & P. Satz (Eds), Rotterdam University Press, Rotterdam, 1970, 41-60.
- Whitaker, H. On the Representation of Language in the Human Brain, Linguistic Research Inc., Edmonton, 1971.