THE EFFECT OF INSTITUTIONALIZATION ON THE SOCIAL BEHAVIOR AND LANGUAGE OF MENTALLY RETARDED CHILDREN

By

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This investigation compared 20 institutionalized and 20 non-institutionalized retarded children on various language and non-language measurements. The language measurements included a computer content analysis utilizing the General Inquirer with the associated Harvard III Dictionary. A developmental sentence type syntactical analysis, employing a system developed by Laura Lee, was used to compare the children on the structural elements of their expressive verbal language. Non-language comparisons included the Vineland Social Maturity Scale, Two-Factor Index of Social Position, and the I Feel - Me Feel self-perception scale.

In analyzing the non-language variables it was found that the institutionalized retardates scored significantly higher on the Vineland scale. These differences in Vineland scores may result more from a problem in informant reliability than in any inherent advantages for retardates in either an institution or community environment. The Two-Factor

Index of Social Position revealed that the social position of the institutionalized children's surrogate parents was significantly higher than the social position of the natural parents of the community-based retardates. For the I Feel - Me Feel self-perception scale no significant differences were found between groups or sexes.

The computer content language analysis revealed certain significant differences with respect to the content categories specified by the Harvard Dictionary. The statistical analysis indicated that the non-institutionalized retardates had more words in the content categories of female role, community, higher status, family and authority theme. In examining the content analysis differences between groups, it was observed that the expected reference words about family members, in the verbal language of non-institutionalized retardates, transcend across the content tags of female role, higher status, family and authority theme. The community category included words such as "hello, name, people, and park."

The institutionalized retarded children scored significantly higher in the referent categories of other, military, sign reject and danger theme. The other content category reflects the institutionalized child's use of non-sex-specific pronouns in adapting to a large number of peers found in the institutional environment. The military, sign reject

and danger theme categories apparently contain many semantic ambiguities within the language of the institutionalized retarded children as opposed to any real differences between the control and experimental groups of retarded children.

In comparing the retarded subjects on the basis of sex, it was found that the female role category favored the females over the male retardates. Due to their sex identification, retarded girls tend to use more feminine gender words in their propositional speech. The content categories favoring the male retardates were male role, good, social place and female theme. The male role related quite logically to the sex identification of the retarded boys. Many of the social place words related to the cottage environment of the institutionalized male retardates. The good content category contained some semantically diffuse words and it would be hazardous to imply any significance to this category appearing more in the verbal language of the male institutionalized retardates. No significance is placed on the female theme favoring the male retardates as there is a strong possibility of a Type I statistical error.

The syntactical analysis illustrated that the group of non-institutionalized retardates used more single word responses than the institutionalized group. Apparently the word "mother" and its derivatives account for this difference. The male retardates used more two-word combinations

possibly because certain two-word responses, among the institutionalized retardates, created more interaction with substitute mother figures. The community male retardates also used an exceptional number of two-word combinations referring to pets.

Clinical implications and future research possibilities were discussed along with various subjective impressions.

CHAPTER I

INTRODUCTION AND BACKGROUND

Related Literature

Communication through language is essential for the proper functioning of the individual within our highly complex society. The majority of human communication is conducted through the form of verbal language. While verbal language is highly developed within the normal population, the mentally retarded exhibit exceptional oral speech and language deficiencies. Spreen (1965), after an extensive search of the literature, reported that even in the mildly retarded 45 percent are impaired in language development. With this proportion, it is essential that we isolate those factors that can perhaps be modified to facilitate improved verbal behavior. While modification of biological factors is important, it is essential that environment be studied as a crucial variable affecting the expressive verbal development in retarded children. Of particular significance is the role that institutionalization plays in oral language development in retarded children.

Studies Comparing Institutionalized and Non-institutionalized Retardates

Most investigators have concluded that the institutionalization of retardates results in more severe verbal language

deficits when compared with matched non-institutionalized retardates. Institutionalized children were found by Little and Williams (1937) to be more defective in vocabulary than matched non-institutionalized children. Schlanger (1954), using mean sentence length and average number of words per minute, also compared matched groups of institutionalized and non-institutionalized children. Children living at home scored significantly higher on both measures. Another study relevant to this apparent relationship was performed by Badt (1958) using a scoring system for qualitative analysis of verbatim vocabulary definitions. An inverse relationship was found between length of institutionalization and abstracting ability. At the conclusion of a series of studies, Lyle (1960) indicated that there are clearly retarding effects within the institution itself. These causes of retarding effects include separation from parents, reduced learning opportunities, and reduced incentive to communicate. Sievers and Essa (1961) found that a non-institutionalized community group of mentally retarded subjects had significantly higher scores on the Developmental Language Facilities Test than a matched institutional group. In analyzing differences favoring the community group, the authors stated that the common factor in those subtests showing differences is the need for the child to express himself in a meaningful way. An additional measurement,

in the form of total verbal output, favored the institutional group. This appears to be in conflict with the study by Schlanger cited above; however, the method of sampling verbal output differed in these two studies. Schlanger used a time segment, whereas Sievers and Essa used total verbalization. Sievers and Essa also found no differences between groups on a part-of-speech analysis including verbs, nouns, adjectives, conjunctions and prepositions. In an expanded part-of-speech analysis, Montague (1967) compared matched groups of institutionalized and non-institutionalized retardates on 13 separate categories. With the exception of prepositions, no significant differences were found between the two groups. This was substantiated by contrasting the use of substantive versus structural parts of speech; the data were dichotomized into word classes of Contentives (Noun, Verb, Adjective, and Adverb) and Functors (Article, Auxiliary, Preposition and Conjunction) for each group. Montague's data also indicated a significantly higher total verbal output to TAT stimuli pictures, with no time limit, favoring the non-institutionalized group. In a recent study, McNutt and Leri (1970) reported on groups, matched by age and IQ, of institutionalized and non-institutionalized mentally retarded children. The two groups were compared on the Illinois Test of Psycholinguistic Abilities, UTAH Test of Language and A Screening Deep Test of Articulation.

On the ITPA, significant differences were found on four subtests favoring the non-institutionalized retardates. However, no differences were found on any of the other measures used in this study.

In summary, we find the earlier studies, such as Little and Williams (1937), Schlanger (1954), and Lyle (1960), showing varying language differences favoring the non-institutionalized retardate when compared with his institutionalized peer. Later studies, including Sievers and Essa (1961), Montague (1967), and McNutt and Leri (1970), while showing some differences favoring non-institutionalized groups of retardates, reported a large quantity of non-varying language variables between institutionalized and non-institutionalized retardates.

Content Analysis

It would appear relevant, at this point, to conduct additional, more extensive research in other areas of the language process between matched institutionalized and non-institutionalized retardates. No extensive, or well controlled studies have been reported comparing the content or referent level of language between institutionalized and non-institutionalized retarded children. For this investigation content analysis is defined as "any research technique for making inferences by systematically and objectively identifying characteristics within text," Stone

et al. (1966, p. 5). In accepting this definition, we must assume that words can significantly tell us about nature, interest and environment of the speaker.

In developing and using a content analysis system, it appears that there are three distinct processes involved. The first step is to specify the content categories to be measured. These content categories may vary widely depending upon the researcher's interest and the nature of the available data. Category construction is the most important step in content analysis for this is where the data being analyzed are tied to the investigator's underlying theory (Stone, p. 9). The validity of any content analysis research design rests upon the foundation of the category selection.

The second process in content analysis is concerned with the specification of rules and contingencies for the establishment of these categories. Words have many different meanings, which depend upon the contextual environment as well as the paralinguistic features of the phonemic system. These "rules of the game" must be consistent and amenable to rigorous intra- and inter-judge reliability if content analysis is to subscribe to the scientific method.

The final process in content research involves the actual coding of the data. Manual coding has proved to be extremely tedious, monotonous, time consuming and expensive.

Due to the time involved, this step has restricted and restrained the growth of content analysis as a tool in the social sciences. However, in recent years, efforts have been made to overcome this barrier through the use of computer content analysis.

Stone (1966) believes that the computer, in content analysis, can not only extend purely mechanical methods into high-volume production but also serve as a flexible adjunct to human thinking, extending the awareness of human intuition, and handling the mechanics of formal analyses. The first application of computer content analysis, according to Stone, was Sebeok's study (1958) on an IBM 650 computer of 4,000 Cheremis folktales. In 1960, David Hays of the Rand Corporation explored possibilities in a paper entitled, "Automatic Content Analysis." Stone further reports that:

> Starting in the late 1950's, a number of investigators began working on general problems of automatic syntax analysis and synthesis, mechanical translation from one language to another, storage and retrieval of large amounts of text information, indexing, and the design of question and answer systems. Basic computer routines and "programming languages" became available to assist in giving text-processing commands to machines that were designed more for processing numbers. One of these languages, called COMIT, was developed by the Mechanical Translation Group at M.I.T. under Victor Yngve. . . . The COMIT system provided a crucial initial flexibility in which a number of strategies could be tried and adjusted. (pp. 63-4)

The General Inquirer System

In 1961 Stone and Bales developed the initial version of the General Inquirer system. The General Inquirer, as described by Stone, is a set of computer programs designed to (a) identify systematically, within text, instances of words and phrases that belong to categories specified by the investigator; (b) count occurrences and specified co-occurrences of these categories; (c) print and graph tabulations; (d) perform statistical tests; and (e) sort and regroup sentences according to whether they contain instances of a particular category system. A number of different category systems can be used by the Inquirer, each representing a different category system. Thus, the investigator can select a category system compatible with the hypothesis he is testing.

Therefore, we find that while the General Inquirer offers a fast and highly reliable computer methodology, for the study of content in language, it also gives the investigator flexibility in the selection of a specific dictionary for testing his underlying hypothesis. The General Inquirer might be considered analogous to a postal clerk sorting mail into pigeon holes. Although there might be a short relearning period, the schematic for the pigeon holes could be periodically changed without impairing the overall efficiency of the clerk. The proper selection or construction of a

schematic, in this case a content dictionary, assumes crucial importance in the study of the language of retarded children. Clearly, the most reliable procedure would be to construct a dictionary specifically designed to look at the language of retarded children. The difficulty with this approach lies in time and expense involved in dictionary construction.

An alternative approach lies in the selection of a dictionary already constructed that is amendable to the sorting procedures of the General Inquirer. According to Dunphy (1966), at least 17 dictionaries have been developed for use with the General Inquirer. Clearly, the vast majority of these dictionaries are highly specialized and have no applicability to the study of language within retarded groups. For example, the Gé Mythology Dictionary, developed by Pierre Maranda at Harvard, for the analysis of plot within Gé mythology would be totally inappropriate as a content analysis dictionary for use with the retarded.

The dictionary that appears to offer the closest fit for the study of the language of retarded children is the Harvard III Psychosociological Dictionary. There are 83 tagged categories which describe over 3,500 lexical entries. In the Harvard III Dictionary, there are 57 first-order and 26 second-order tag categories. First-order tags represent the most explicit denotative meanings. Words and idioms

are assigned to only one first-order category and, thus, there is no overlap between them. In addition, as many second-order tags are assigned as are needed to complete the description. These categories overlap and the investigator must take this into account. In regards to category construction, the authors felt that:

> . . . sociology furnished a set of categories better suited to classifying roles, objects, and cultural artifacts than did psychology. On the other hand, psychology presented more clearly defined categories for dynamic processes. We proceeded, therefore, to give most nouns (object names) a sociological definition and most verbs a psychological definition at the denotative level. In the listing of tags, the first-order distinction refers to the primary explicit, denotative meaning of words. (Stone,1966,p.171)

This dictionary, which gives a complete explanation and definition of the tags, is found in Appendix A.

A distinct advantage with the General Inquirer, and the associated Harvard Dictionary, is that additional words can be tagged and inserted into the dictionary. This facilitates the inclusion of certain high frequency words which might be unique in the language patterns of retarded children. A special word frequency program, constructed from language samples of selected retarded children, will assist in this preliminary dictionary reconstruction.

Syntactical Analysis

In addition to the contentive analysis, a structural syntactic language analysis will be applied to the data.

Several conventional systems for syntax analysis were examined. Lee's (1966) developmental sentence type system presents syntactic development on a systematic basis. Lee presents four major types of sentence types: two-word combinations, noun phrases, constructions, and kernal sentences. These levels are based on previous psycholinguistic research and have demonstrated the ability to differentiate between a normally developing child and a "language-delayed" child. With consideration for its theoretical basis, this developmental sentence type system was selected for this investigation.

Non-language Variables

While the major portion of this study is concerned with the content analysis of the verbal language of retarded children, it seemed appropriate that additional data be gathered for possible later comparison and correlation. Data on the social maturity of the two groups of retarded children were gathered through the use of the Vineland Social Maturity Scale. According to Doll (1947), this scale provides a definite outlook of detailed performances in respect to which children show a progressive capacity for looking after themselves and for participating in those activities which lead toward ultimate independence as adults. A comparison between the institutionalized and non-institutionalized retardates on social environment was made using

Hollingshead's Two-Factor Index of Social Position (1957). A complete description and listing of categories for this Index is contained in Appendix B. A final non-linguistic measurement will be the I Feel - Me Feel self-perception scale by Yeatts (1967). This is a five-point pictorial scale that is designed to measure a child's self-perception, primarily with reference to his school environment.

Purpose of this Study

The major purpose of this study is to ascertain if there are any significant differences within the contentive aspects of expressive verbal language between matched groups of institutionalized and non-institutionalized retarded children. Syntactical development and non-linguistic contrasts and comparisons of social maturity, social environment and self-perception are also evaluated.

CHAPTER II

PROCEDURE

Selection of Subjects

The control group consisted of 20 mentally retarded children residing at home in Marion County, Florida. All of these children attended special education classes within the Marion County public school system. The experimental group consisted of 20 mentally retarded children, matched on IQ and age with the control group, residing at a state-supported institution for the mentally retarded (Sunland Training Center, Gainesville, Florida). The majority of the IQ scores, for both groups, are WISC full range scores administered within the past four years. Other test scores, such as the Stanford-Binet, were used on occasion. Where more than one IQ test score was reported for a subject, a psychologist, familiar with the child, was consulted for advice. No effort was made to match on etiological organic factors, as there is no evidence that specific organic conditions result in peculiarly deviant language pathologies (Lenneberg, 1967, p. 309). The results of t-tests for age and IQ ($t = .14$, $.10$; respectively, $df = 38$) revealed no significant differences between group mean scores.

The subjects were selected randomly with age and IQ being the criteria for inclusion in this study. A chronological age range between 7 and 13 years was decided upon for the age variable. The educable IQ range of roughly 50 to 75 was selected as the other major independent variable. Age and IQ scores on both the non-institutionalized and institutionalized are contained in Table 1.

Sex and race variables were controlled within the non-institutionalized group (all white, 10 girls and 10 boys matched by age and IQ). However, difficulty was encountered in matching between the institutionalized and non-institutionalized on sex. The institutionalized group contains 16 boys and 4 girls. Since sex functions as one of the dependent variables in the statistical analysis in Chapter V, covariance procedures will be employed with IQ and age functioning as the covariates. In addition, five of the institutionalized children were black. The cultural variable of race would appear to be somewhat muted within the institution as both black and white children enjoy the same environment. The five institutionalized black children in this study had spent an average length of time of over three years in the institutional environment. Thus, race will be treated as a nuisance variable. While exact matching could have been obtained on sex and race, the decision was made to match on the more crucial IQ and age variables.

TABLE 1

AGE, IN YEARS AND MONTHS, AND IQ SCORES OF 20 NON-INSTITUTIONALIZED AND 20 INSTITUTIONALIZED MENTALLY RETARDED CHILDREN

Non-institutionalized Retardates		Institutionalized Retardates	
Age	IQ	Age	IQ
7-9	68	8-0	68
8-5	61	8-0	72
9-2	55	8-4	55
9-3	72	8-6	72
9-7	66	8-9	54
9-9	71	8-9	63
9-10	62	8-10	67
10-2	74	10-1	79
10-8	72	10-2	57
10-9	68	10-8	60
11-0	72	11-0	56
11-2	75	11-8	67
11-8	80	11-11	79
11-8	58	12-1	50
11-9	58	12-3	48
12-5	65	12-5	60
12-5	56	13-0	73
12-5	50	13-0	69
12-10	63	13-0	73
12-11	46	13-7	77
Range 7-9 to 12-11	46 to 80	8-0 to 13-7	48 to 79
Mean 10-9	64.6	10-8	64.9
SD 1-6	8.9	1-11	9.5

The length of institutionalization was considered to be an important variable, in need of control, with respect to the institutionalized retardates. For the experimental group of retardates, the length of institutionalization ranged from 25 to 101 months with a mean of four years, six months. These data are presented in Table 2.

Experimental Procedure

The parents of the non-institutionalized children were contacted by mail, telephone, or in person for permission to include their child in this study. Permission was obtained from the Sunland officials allowing the experimental data to be gathered at their institution. The experimental procedure was divided into two distinct stages necessary for this study. The first stage was concerned with preliminary screening and testing. The second stage included collecting the verbal language samples within the home or cottage environment. A single examiner was used for gathering the data in both stages from all the subjects.

Stage I

Efforts were made to create an experimental procedure that would be as similar as possible for both groups of retarded children.

For the non-institutionalized group of children, it was necessary to gather the Stage I data within the school. Principals and teachers cooperated in attempting to find

TABLE 2

LENGTH OF INSTITUTIONALIZATION OF EXPERIMENTAL GROUP OF RETARDATES

Subject #	Length of Institutionalization (in months)	Subject #	Length of Institutionalization (in months)
1	77	11	45
2	40	12	61
3	25	13	87
4	101	14	87
5	31	15	63
6	54	16	81
7	39	17	25
8	40	18	32
9	57	19	32
10	65	20	34
Range in length of institutionalization		25 to 101 months	
Mean length of institutionalization		4 years, 6 months	

the most quiet and non-distracting environment possible. While ambient noise did present a problem, with respect to hearing testing, for the most part these school environments proved satisfactory for data collection purposes. A total of seven different schools in Marion County were visited to collect the data from the non-institutionalized group of children. The institutionalized group of children was given their Stage I testing in a special sound-treated room in the academic building at Sunland Training Center.

Hearing threshold testing was administered in order to rule out any gross hearing problems. Pure tone threshold testing was conducted at 250, 500, 1000, 2000 and 4000 Hz for both ears. A single, recently calibrated, portable Beltone Audiometer, Model 10A (ISO 1964) was used for testing all 40 children. No severe or profound losses were encountered that would significantly affect the decoding or encoding of verbal language.

The Vineland Social Maturity Scale was also partially, or fully, administered with some of the older and brighter control and experimental group children acting as their own informants. The instructions for this scale specifically allow subjects to be their own informants if they have the capability. Frequently the investigator would later verify the information given by the children. However, most of the Vineland information was obtained from parents or surrogate

parents at the conclusion of the Stage II procedure.

During this period of testing, all subjects were administered the I Feel - Me Feel self-perception scale. Each child was given this scale on an individual basis. All subjects, with the exception of four who could not be conditioned, were given the Snellen Illiterate E Vision Screening Test to rule out any gross vision problems that might interfere with their visual perception of the I Feel - Me Feel self-perception scale.

Some limited information on the social position of the parents was also obtained during this first stage of testing.

Stage II

This second stage, for both groups, involved going directly into each child's place of residence to secure the language samples. An unstructured technique, as developed by Hutchinson (1967), was selected for sampling the verbal language of each child. This system utilizes a transitorized FM wireless microphone, Vega type 500, that is worn by a child as he goes about his normal activities. The microphone was placed in a specially constructed cloth harness that encased two short microphone antennas and was worn about six inches from the mouth of the child. The signal generated by the microphone-transmitter is received by a Vega Receiver, Model 10, and fed into a Uher 4000

Report-L recorder. The recording speed was 15/16 ips.[1] Scotch Magnetic Tape 200, .5 Mil was used for recording purposes. This unstructured"slice of life"system offers the advantage of creating a true "slice of life" procedure in collecting verbal language data from children. Appendix C discusses, in limited detail, other approaches to verbal language gathering procedures and the advantages of the technique selected for this study.

The parents and surrogate cottage parents, in the case of the experimental group, were advised that the children should be allowed to do anything in the way of normal activities. The only exception to this would be the taking of a shower or bath with the microphone still being worn. The range of recording time actually obtained for each subject was from one hour to three and one-half hours with the majority of recordings averaging approximately two hours. It was generally found that a sufficient corpus of verbal language could be obtained from the brighter subjects in a shorter period of time. At the conclusion of the recording sessions, additional information, from the parents and surrogate cottage parents, was obtained on each child's

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[1]The major advantage of recording at 15/16 ips is the greater length of recording time. With the slower speed, four straight hours of uninterrupted recording time could be obtained. A pilot investigation, using two children under varying conditions, tested the quality of the different recording speeds. While the higher speeds offered an increased audio range, it was the judgment of this investigator that there was no significant difference in the quality of speech reproduction. The effective 40-4500 Hz of the 15/16 ips appears to be adequate for language recording purposes.

functioning in relation to the Vineland Scale. Additional information from the parents of the non-institutionalized retardates was obtained on the family social position.

CHAPTER III

DATA CLASSIFICATION

Verbal Sampling Design

In comparing groups on quantitative and qualitative language measurements, it is important that equivalency of raw data be controlled through an initial independent variable or later statistical control. Statistical control, through analysis of covariance procedures, can be used to "make up" for varying independent variables. Montague (1967) used this procedure when his control group had a much larger language corpus (number of words) than his experimental group. However, the preferred methodology is to experimentally control the variables. The General Inquirer offers an approach to control for variation in sample size through what is called the concept index scores. This is a ratio or percentage of occurrence of categories based on the total verbal output. On the surface, this would appear to control for the varying lengths of verbal samples. However, this fails to take into account the possibility that percentages of content categories may vary as a direct result of the length of different samples. For example, in shorter instances of recording, when the

subject knows he is being recorded, you may find larger percentages in the sociological noun categories.

Equivalency of these language samples can be experimentally controlled by selecting an equal portion of the language sample from each subject so that the independent verbal language sample is equal. The question then arises as to which unit, or units, of the language sample you wish to hold constant as your independent variable. Any one of several measures including phonemes, morphemes, syllables, sentences, etc. could be used for this control.

For this study, words were selected as the controlling linguistic variable to provide sampling equivalency between individual subjects as well as the two major groups under study. While the word is perhaps the most ambiguous of all linguistic units, "something with two empty spaces around it," it would appear that this would be the most significant controlling unit for a study devoted primarily to this type of content analysis. Words are the distinct contentive units that are eventually tagged through the General Inquirer program. An approximate sample of 500 words per subject was randomly sampled from the recording of each child. This totalled about 10,000 words per group.

Transcription of Speech

The selection of 500 representative words for each subject was carefully controlled. During the first half hour

of recording, the subjects were prone to make reference to events directly connected to the experimental procedure. Such remarks as: "don't touch the microphone," "I on the radio," etc. were quite common. Other automatic language productions, produced by some of the children during this initial recording period, included rote language such as the child saying the days of the week, counting, the alphabet, etc. Surprisingly, it was found that many of the children, at times, would sing songs. Since this singing was mostly on an automatic rote level (Jingle Bells, Happy Birthday, etc.), it was believed that this singing should also be eliminated from the transcriptions. For one (experimental group) child it was possible to obtain only a 288 word sample. Sufficient additional words were "borrowed" from another matched subject (subject #40 in Table 3 contributed 681 words) in the same group. The total number of words by subject and group is contained in Table 3.

To control for transcription reliability, a 500-word sample from each subject's language recording was edited and typed by this investigator. It was felt that this investigator, having familiarity with each child's home or cottage environment, would be able to produce the most reliable transcription on each child. Familiarity with each subject's voice and language pattern enabled this investigator to accurately transcribe each subject when competing

TABLE 3

TOTAL NUMBER OF SAMPLE WORDS, BY SUBJECT AND GROUP, SELECTED FOR ANALYSIS

Control Group		Experimental Group	
Subject #	Total Number of Words	Subject #	Total Number of Words
1	500	21	488
2	501	22	288
3	499	23	490
4	501	24	496
5	504	25	498
6	451	26	507
7	501	27	503
8	501	28	501
9	501	29	506
10	501	30	500
11	501	31	505
12	500	32	504
13	504	33	500
14	500	34	502
15	503	35	499
16	501	36	503
17	500	37	498
18	500	38	504
19	502	39	500
20	502	40	681
Total Words	9,973		9,973

voices of other children were recorded. Each child's taped language sample was played back on a Uher Report L transcriber with an associated manual backup switch adaptable for use with a typewriter. Reliability of transcription was checked on a random basis by having three of the tapes retyped by a professional typist. A comparison between these professional typist typescripts and those completed by this investigator indicated close agreement on the language samples.

Some special conventions had to be applied in editing the typescripts in preparation for the computer analysis. The special characters right (>) and left (<) angle brackets were placed at the beginning of each new subject's text and assigned the function of enclosing ID fields. The dollar sign ($) was placed at the beginning and end of the subject's name as the first card in the data deck. Most of the standard punctuation characters retained their same function as in ordinary text. The period (.), question mark (?) and exclamation mark (!) were used exclusively for terminal punctuation. The comma (,) was used in its normal grammatical function as well as in certain special instances. The comma was adopted for use in certain titles such as "Mrs, Mr, Dr," in order that the computer would not read the normally appearing period after these titles as terminal punctuation. The asterisk (*) indicated

the end of a subject's sample and immediately followed the last word. The apostrophe (') was used, as in ordinary orthography, to indicate possession and for contractions. A pound sign (#) was used before a proper name. This pound sign eliminated any miscoding of proper names, e.g., #Miss Black. Some additional limited editing was conducted whereas parentheses were used to enclose words of clarification which allowed assignment of words not in the Harvard III Psychosociological Dictionary. Such words as "whatsha, gotta, and wanna" were expanded to "what you, got to and want to." Random language samples appear in Table 4.

TABLE 4

RANDOM VERBAL LANGUAGE SAMPLES FROM FOUR SUBJECTS

Institutionalized Male Subject
"You know what that it? A dog. A doggie. You scared of that doggie."
Institutionalized Female Subject
"That's mine. There. Yeah they sure are. It says happy birthday. Look at that."
Non-institutionalized Male Subject
"Mama? You coming back? Huh? Oh. OK. Hi kitty. Kitty. Oh #Skipper. Yeah. #Skip. #Skip."
Non-institutionalized Female Subject
"Me? Looks good. I said good. I ain't nothing. What he said. Mama?"

Computer Content Analysis Processing

The verbal data samples were entered on standard 80 column electronic data processing cards. Key punch reliability was checked by obtaining an 80 by 80 read-out of all the key punched data. A sight comparison between the original transcripts and the 80 by 80 read-out revealed less than one error per thousand words. These errors were corrected by key punching new cards and inserting these corrected cards in their proper sequence in the data decks.

Since this is a study of the language of retarded children, it is recognized that many of the more frequent words used by this group may not be contained in the Harvard III Psychosocial Dictionary. However, new words with the appropriate tags can be added to the dictionary. In order to do this, it was necessary to first locate those most frequent words, used by the retarded children, that are not presently included in the Harvard Dictionary. A random selection of language samples was then processed through a Frequency Word Listing Program developed by Hutchinson and Lynch (1970). This random selection included six samples from the institutionalized and six from the non-institutionalized group. This Frequency Word Listing Program then provided an alphabetic printout, by frequency, of all the words contained in the 12 samples. The printout from this program was then compared with a printout of the Harvard Dictionary. Those

high frequency words from the retarded children's language samples, not occurring in the dictionary, were then coded, key punched and inserted into the Harvard Dictionary. Table 5 contains a listing of the additional high frequency words added to the dictionary.

At this point the data were processed, individually by subject, through the General Inquirer and content category totals obtained.[2] This operation consists of counting the number of times the text's content units were classified into each of the Harvard Dictionary categories. The content category tally operation results in the assignment of two types of numbers to each document analyzed; one set represents the absolute frequency of occurrence (raw scores); the second represents the relative frequency of occurrence (index scores) of content categories.

Syntactical Processing

The syntactic analysis of each subject's language sample was processed independently from the computer content analysis. Using Lee's (1966) system, all the syntactical units were manually coded and tabulated. Two additional

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[2]Slightly different word totals were obtained in the General Inquirer printouts as compared to those reported in Table 3. The last sentence in each sample was deleted due to a misplaced asterisk. This was a uniform deletion across all 40 subjects and did not significantly affect equivalency of the samples.

TABLE 5

HIGH FREQUENCY RETARDED CHILDREN'S WORDS ADDED TO THE HARVARD DICTIONARY

Word	First Order Tag	Second Order Tag(s)	Justification and Reasoning for Placing in Tagging Categories
mama	Female-Role	Family,Higher-Status	Same tagging as for mother in Harvard Dictionary.
yeah		Sign-Accept	Same tagging as the Harvard Dictionary uses for yes.
play	Pleasure	Recreational	Appears to be the most logical categories; even if used as a noun by a retarded child, it would generally fall within these categories.
daddy	Male-Role	Higher-Status,Family, Authority-Theme	Same tagging as for father in Harvard Dictionary.
OK		Sign-Accept	Same tagging as for yes in the Harvard Dictionary.
one-ten	Quantity-Reference		The majority of the retarded children's reference to cardinal numbers relates to quantity.

TABLE 5--Continued

Word	First Order Tag	Second Order Tag(s)	Justification and Reasoning for Placing in Tagging Categories
huh	Communicate		Used with a rising inflectional pattern denoting a questioning attitude on the part of the child, e.g., huh?
bye	Affection	Sign-Accept	Same tagging as for good-bye in Harvard Dictionary.
cheat	Bad	Sign-Reject	These categories were picked on the subjective impressions of the investigator. They appear to be the most logical categories.
alright	Good	Sign-Accept	The word right in the Harvard Dictionary has the first order tag of Good and it is the impression of the investigator that Sign-Accept is appropriate as a second order tag.
beat	Anger	Sign-Strong	These categories were picked on the subjective impression of the investigator. These appear to be the most logical categories.

TABLE 5--Continued

Word	First Order Tag	Second Order Tag(s)	Justification and Reasoning for Placing in Tagging Categories
football		Recreational, Male-Theme	These categories were picked on the subjective impressions of the investigator. They appear to be the most logical categories.
hi	Affection	Sign-Accept, Community	These are the same categories that the Dictionary picks for good-bye and the listings appear to be logical.
mom	Female-Role	Family,Higher-Status	Same tagging as for mother in the Harvard Dictionary.
cowboy	Job-Role	Technological, Sign-Strong	Job-Role and Sign-Strong are the same categories assigned for policeman. Technological appears to be logical in that this is a category that lists occupations.
car	Tool	Male-Theme, Economic	These are the same categories that the Dictionary picks for automobile and the listings appear to be logical.

TABLE 5--Continued

Word	First Order Tag	Second Order Tag(s)	Justification and Reasoning for Placing in Tagging Categories
kitty	Natural-Object	Female-Theme	These are the same categories that the Dictionary picks for cat.
TV	Tool	Recreational	The Harvard Dictionary lists radio under tool; however, they give no second order tag for radio. The second order tag of Recreational was picked on a logical basis.
television	Tool	Recreational	Same as above.
cookie	Food		This category was picked on a logical basis.
una	not		This was a common neologism used among the retarded denoting negation. The first order tag is the same one used for no.
donkey	Natural-Object	Male-Theme, Recreational	These are the same categories used for horse with the exception that we have omitted the Ascend-Theme.
unhun	Sign-Accept		This was a common neologism used among the retarded denoting affirmation. The first order tag is the same one used for yes.

categories were added to supplement Lee's system. The first additional category involves single word utterances. While single words are not strictly representative of syntax, they clearly designate a distinct level prior to the child's development of two-word combinations. Thus, the one-word response has been adapted as an additional level for comparison in this investigation. It was necessary to add a sixth category labelled unclassified to accommodate some small ambiguities. Intra-judge reliability of syntax coding was checked by a random selection of two language samples and a recoding of the syntax. Reliability was established at a high degree of positive correlation. Appendix D lists the raw data for the syntax categories.

CHAPTER IV

ANALYSIS OF DATA AND RESULTS

This chapter presents the descriptive and statistical analyses of the non-language and language dependent variables. Institutionalized and non-institutionalized mentally retarded children were selected for control and experimental groups and measured on a variety of language and non-language measurements. In order to obtain the maximum information, both parametric and non-parametric statistical tests were applied to the data. The selection of statistical tests was based on the underlying assumptions applicable to the particular variable(s) being analyzed.

For the majority of variables, an analysis of multiple covariance statistical technique was selected (Kirk, 1969, pp. 455-58). Covariance combines the advantages of regression analysis with analysis of variance and permits the removal of potential sources of bias from the experiment. This technique is particularly applicable in this study with respect to the sex variable. The retarded girls were older and had higher IQ scores in contrast to the retarded boys. For this study, the language and non-language variables were treated as the main dependent variables with

IQ, age, sex and interaction functioning as the covariates. The term interaction means that one treatment behaves differently under different levels of the other treatment. Whenever an interaction is significant, interpretation of tests of main effects must be qualified. A covariance statistical computer program, BMD04V, computed an observed F for the main dependent variables and t-values for the four covariates. Due to special reasons, which will be explained later in this chapter, a single t-test was used for examining only group differences, eliminating sex and interaction for the non-language variable of parental social position of the parents and surrogate parents of the two groups of retardates.

A problem arose with respect to some of the General Inquirer tags, particularly the second-order tags, because of zero percentage word index scores by many of the subjects eliminating the homogeneity of variance assumption necessary for analysis of variance techniques. For these content categories, the non-parametric Wilcoxon Signed Rank test was employed. The Signed Rank test assumes continuous data and a repeatable experiment. Only institutionalized versus non-institutionalized group differences were examined with this non-parametric test. Non-parametric tests were not made on the sex or interaction variables of these categories because of the severely limited frequencies of

occurrence, asymmetrical weighing of the sex variable (26 males, 14 females), and problems with the covariates of IQ and age.

The .05 level of significance has been established as the minimal level for accepting significant differences for each variable analyzed in consideration that this is an investigation falling within the general area of the social sciences. It is recognized that this level of significance leaves a greater chance for the acceptance of differences in our dependent variables, when in reality these differences may merely reflect numerical variation. This possibility of Type I errors will be taken into account in the Discussion chapter.

Analysis of Non-language Variables

The initial analyses were concerned with the non-language measurements. The first analysis investigated the Vineland Social Maturity Scale total scores of the two groups. Descriptive data on the social maturity scores for this scale are contained in Table 6. The analysis of covariance indicated that a difference, observed $F_{1.34} = 9.376$ $P < .01$, existed between the institutionalized and non-institutionalized retardates with the institutionalized scoring significantly higher on the Vineland. In addition a highly significant t of 3.7284 was obtained on the IQ

TABLE 6

VINELAND SOCIAL MATURITY SCALE SCORES OF NON-INSTITUTIONALIZED AND INSTITUTIONALIZED RETARDATES

Sex	Non-institutionalized Scores	Sex	Institutionalized Scores
F	91	M	59
F	84	M	92
F	72	M	79
F	100	M	62
F	100	M	85
F	87	M	74
F	79	M	111
F	66	M	93
F	71	M	33
F	82	M	91
M	87	M	84
M	71	M	82
M	62	F	106
M	87	F	115
M	81	F	86
M	60	M	127
M	65	F	129
M	76	M	95
M	85	M	115
M	68	M	100
Range	60 to 100		33 to 129
Mean	78.7		90.0

covariate $P < .001$ indicating that the higher IQ retardates, as opposed to the lower IQ retardates, scored higher on the Vineland Scale. There were no significant differences with respect to sex, age or interaction on the Vineland.

The Hollingshead Two-Factor Index of Social Position was analyzed and contrasted for both the institutionalized and non-institutionalized groups. Occupation and education are the two factors utilized to determine social position on this index. Within the institutionalized group, parental data are reported with respect to surrogate parents in the form of cottage parents, cottage supervisors and trainers.[3] These individuals, from the observations of this investigator, serve as surrogate parent substitutes with the children. This representative group of surrogate parents had been at the Sunland Training Center from one to 16 years with a mean of over six years, six months. Table 7 presents the social position data for the major wage earning parental figure in each child's environment.

With respect to this Two-Factor Index of Social Position, only the dependent group variable of institutionalization versus non-institutionalization was statistically analyzed. Neither sex or interaction between groups and sex were

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[3] The trainer position, in each cottage, concentrates on developing self-help skills, social adaptation and pre-academic concepts with the children.

TABLE 7

SOCIAL POSITION WEIGHTED SCORES ON THE TWO-FACTOR INDEX OF SOCIAL POSITION FOR THE NON-INSTITUTIONALIZED AND INSTITUTIONALIZED GROUPS OF RETARDATES

Non-institutionalized Retardates

Subject's Sex	Parental Education	Parental Occupation	Weighted Score
F	8	Dish Washer	73
F	9	Laborer (unemployed)	73
F	5	Welfare	77
F	9	Bar Tender	66
F	15	Asst. Office Manager	33
F	12	Truck Driver	58
F	10	Heavy Equip. Oper.	62
F	12	Rural Mail Carrier	51
F	12	Plasterer	51
F	7	Truck Driver	66
M	8	Lunch Room Mgr.	52
M	6	Movie Projectionist	70
M	3	Equip. Oper. Rd. Dept.	70
M	12	Truck Driver	58
M	8	Equip. Oper. Rd. Dept.	66
M	10	Truck Driver	62
M	11	Electrician	55
M	0	Welfare	77
M	3	Plumbing Helper	70
M	12	Widow - Soc. Secur.	65
Range	0 to 15		33 to 77
Mean	8.6		62.7

TABLE 7--Continued

Institutionalized Retardates			
Subject's Sex	Surrogate Parental Education	Surrogate Parental Occupation	Weighted Score
M	16	Trainer	29
M	12	Cottage Parent	58
M	8	Supervisor	45
M	12	Cottage Parent	62
M	12	Cottage Parent	58
M	12	Trainer	33
M	11	Cottage Parent	62
M	12	Cottage Parent	58
M	12	Cottage Parent	58
M	12	Cottage Parent	58
M	12	Cottage Parent	58
M	8	Cottage Parent	66
F	8	Cottage Parent	66
F	12	Trainer	37
F	12	Cottage Parent	58
M	8	Cottage Parent	66
F	10	Supervisor	41
M	8	Cottage Parent	66
M	12	Cottage Parent	58
M	10	Cottage Parent	62
Range	8 to 16		29 to 66
Mean	10.9		54.9

analyzed due to the semi-mobility of both the institutionalized retardates and their surrogate parents. It is not uncommon for either the cottage parents or the institutionalized retardates to be transferred to different cottages as circumstances warrant. However, it should be pointed out that both the institutionalized retardates and their cottage parents are still within the institutional environment. A t-test on the social position scores, between the natural parents of the non-institutionalized retardates and the surrogate parents of the institutionalized retardates, revealed an observed t of 3.508 significant at the .01 level (38 df). This indicates that the social position of the institutionalized children's surrogate cottage parents is significantly higher than the social position of the natural parents of the community-based retardates.

The I Feel - Me Feel self-perception scale yielded total scores that are reported in Table 8. The analysis of covariance for this self-perception scale indicated no significant differences between the institutionalized versus non-institutionalized groups nor between sexes, IQ, age or interaction functioning as covariates. An overall mean self-perception of all 40 retarded children on all 40 I Feel - Me Feel items is presented in Figure 1.

TABLE 8

I FEEL - ME FEEL SCORES OF NON-INSTITUTIONALIZED AND INSTITUTIONALIZED RETARDATES

Sex	Non-institutionalized Scores	Sex	Institutionalized Scores
F	193	M	136
F	143	M	133
F	196	M	193
F	173	M	185
F	172	M	44
F	127	M	162
F	179	M	196
F	192	M	174
F	156	M	180
F	168	M	196
M	193	M	142
M	177	M	160
M	156	F	147
M	115	F	192
M	177	F	162
M	127	M	150
M	94	F	183
M	123	M	129
M	184	M	194
M	161	M	197
Range	94 to 196		44 to 197
Mean	160.3		162.7

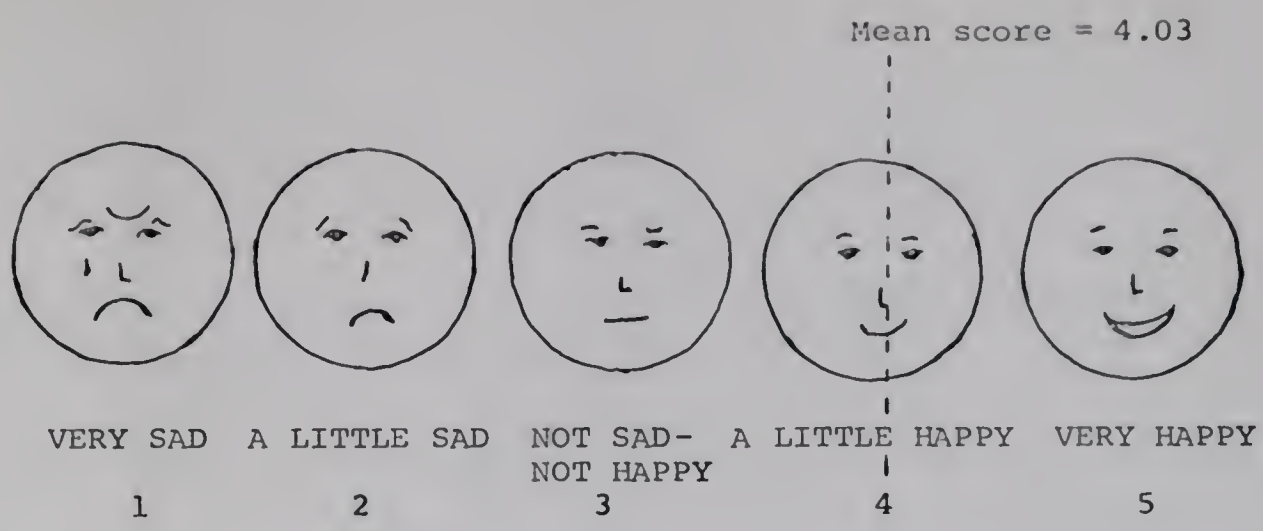

Figure 1.--Mean score of all 40 retarded subjects as a group on the I Feel - Me Feel 5-point scale.

Analysis of Language Variables

Content Analysis

The dependent content language variables were computer sorted into 55 first-order and 28 second-order word concept categories from the Harvard III Psychosociological Dictionary. The computer program provides for (1) text and list of category assignments, (2) tag rally by raw scores, (3) concept index scores (the ratio of occurrence of tagged lexical units to total assignments), and (4) left-over list of words not in the dictionary (Stone *et al*., 1966; Miller, 1970). Appendix A, with the associated tables, provides specific definitions of each category. Since this system is concerned with the content area of language, certain high frequency words, such as functors, were not placed in content categories. Examples of these functor words include: a, an, the, is, to, and will.

For statistical analysis, the word index scores offers the best reliability for comparing data. This score represents the relative frequency of occurrence as opposed to the absolute frequency for words falling within a particular content category when compared to the total words contained within a language sample. This offers the advantage of comparison between documents of varying lengths. While these 40 language samples are essentially the same length (500 words each), there are two subjects that have significant variation (see Table 3, subjects 22 and 40) to warrant use of the word index scores. Table 9 lists the significant statistical differences, by levels of significance, comparing the institutionalized and non-institutionalized retardates on the Harvard III Dictionary content categories.

Table 10 lists the statistical differences, by levels of significance, comparing the female and male retardates by analysis of variance covariates on the Harvard III Dictionary. The covariates are reported in terms of t-tests. Tests were not made on several content categories because of considerable zero frequency scores by individual subjects and the asymmetrical weighting of the sex variable (26 males, 14 females). Only those categories that were statistically tested are listed.

A significant contribution by the third level of analysis, interaction, indicates a complex effect through group

TABLE 9

SUMMARY OF SIGNIFICANT COVARIANCE F TESTS OR SIGNED RANK* TESTS COMPARING INSTITUTIONALIZED AND NON-INSTITUTIONALIZED GROUPS OF RETARDED CHILDREN ON THE HARVARD III DICTIONARY CONTENT CATEGORIES

Harvard III Dictionary Content Category	Significantly Favoring Non-institutionalized Group	Significantly Favoring Institutionalized Group
Social Realm: Persons		
1. self	-	-
2. selves	-	-
3. other		.01
Social Realm: Role		
4. male role	-	-
5. female role	.05	
6. neuter role	-	-
7. job role	-	-
Social Realm: Collectivities		
8. small group (too many zero scores for comparison)		
9. large group (too many zero scores for comparison)		
Cultural Realm: Objects		
10. food	-	-
11. clothing	-	-
12. tool	-	-
Cultural Realm: Setting		
13. social place	-	-
Cultural Patterns		
14. ideal value	-	-
15. deviation	-	-
16. action norm	-	-
17. message form	-	-
18. thought form	-	-
19. nonspecific object	-	-

TABLE 9--Continued

Harvard III Dictionary Content Category	Significantly Favoring Non-institutionalized Group	Significantly Favoring Institutionalized Group
Natural Realm		
20. body part	-	-
21. natural object	-	-
22. natural world	-	-
Qualifiers		
23. sensory reference	-	-
24. time reference	-	-
25. quantity reference	-	-
26. space reference	-	-
Psych. Processes: Emotion		
27. arousal (too many zero scores for comparison)		
28. urge	-	-
29. affection	-	-
30. pleasure	-	-
31. distress	-	-
32. anger (too many zero scores for comparison)		
Psych. Processes: Thought		
33. sense	-	-
34. think	-	-
35. if	-	-
36. equal (too many zero scores for comparison)		
37. not	-	-
38. cause	-	-
39. defense mechanism	-	-
Psych. Processes: Evaluation		
40. good	-	-
41. bad	-	-
42. ought	-	-
Behavioral Processes: Social Emotional Actions		
43. communicate	-	-
44. approach	-	-
45. guide	-	-

TABLE 9--Continued

Harvard III Dictionary Content Category	Significantly Favoring Non-institutionalized Group	Significantly Favoring Institutionalized Group
46. control	-	-
47. follow (too many zero scores for comparison)		
48. attack	-	-
49. avoid	-	-
Behavioral Processes: Impersonal Actions		
50. attempt	-	-
51. get	-	-
52. possess	-	-
53. expell	-	-
54. work	-	-
55. move	-	-
Institutional Contexts		
56. academic	-	-
57. artistic	-	-
58. community	.01*	
59. economic	-	-
60. family	.01*	-
61. legal (too many zero scores for comparison)		
62. medical (too many zero scores for comparison)		
63. military		.05*
64. political	-	-
65. recreational	-	-
66. religious	-	-
67. technological	-	-
Status Connotations		
68. higher status	.01*	
69. peer status	-	-
70. lower status	-	-
Psych. Themes		
71. overstate	-	-
72. understate	-	-
73. sign strong	-	-
74. sign weak	-	-

TABLE 9--Continued

Harvard III Dictionary Content Category	Significantly Favoring Non-institutionalized Group	Significantly Favoring Institutionalized Group
75. sign accept	-	-
76. sign reject		.05
77. male theme	-	-
78. female theme	-	-
79. sex theme	-	-
80. ascend theme	-	-
81. authority theme	.05*	
82. danger theme		.05*
83. death theme	-	-
nulls (not coded)	-	-

TABLE 10

SUMMARY OF T-TESTS FROM ANALYSIS OF COVARIANCE COMPARING THE RETARDED CHILDREN BY THE SEX COVARIATE

Harvard III Dictionary Content Category	Significant t's Favoring Female Group	Significant t's Favoring Male Group
Social Realm: Persons		
1. self	-	-
3. other	-	-
Social Realm: Role		
4. male role		.05
5. female role	(.05)*	
Cultural Realm: Objects		
12. tool	-	-
Cultural Realm: Setting		
13. social place		.05
Cultural Patterns		
19. nonspecific object	-	-
Qualifiers		
24. time reference	-	-
25. quantity reference	-	-
26. space reference	-	-
Psych. Processes: Emotion		
28. urge	-	-
Psych. Processes: Thought		
33. sense	-	-
34. think	-	-
37. not	-	-
Psych. Processes: Evaluation		
40. good	-	(.05)*
Behavioral Processes: Social Emotional Actions		
43. communicate	-	-
44. approach	-	-
49. avoid	-	-

TABLE 10--Continued

Harvard III Dictionary Content Category	Significant t's Favoring Female Group	Significant t's Favoring Male Group
Behavioral Processes:		
Impersonal Actions		
51. get	-	-
55. move	-	-
Institutional Contexts		
65. recreational	-	-
Psych. Themes		
71. overstate	-	-
72. understate	-	-
73. sign strong	-	-
74. sign weak	-	-
75. sign accept	-	-
76. sign reject	-	-
77. male theme	-	-
78. female theme		.05
79. sex theme	-	-
80. ascend theme	-	-
nulls (not coded)	-	-

*All of the t's are computed on a two-tailed test. If a one-tailed test is employed <u>female role</u> and <u>good</u> become significant at the .05 level favoring the female and male groups respectively.

and sex effects. The only category found to be demonstrating interaction was good falling under Psychological Processes: Evaluation. This means that the significant one-tailed good category favoring the male retardates is influenced by the institutionalized/non-institutionalized level of analysis. Any interpretation of this good category favoring the male retardates must be tempered by this interaction effect.

Syntactical Analysis

The developmental sentence type raw frequency data are presented in Appendix D. These raw scores were converted to percentages which are contained in Tables 12 and 13.

Table 14 contains the statistical analysis for the syntactical development. Sex and interaction were not tested on the noun phrase level because of lesser frequencies of occurrence and asymmetrical weighting of the sex variable. The unclassified were not given any statistical tests due to the non-occurrence of this category in the majority of the subjects' verbal language samples.

Summary of Statistical Analyses

The use of t-tests, Signed Ranks and covariance statistical tests indicated that a number of non-language and language variables were significantly different in certain instances, with respect to group, sex and interaction in retarded children. Among non-language measures, results of

TABLE 11

SUMMARY TABLE OF SIGNIFICANT CONTENT CATEGORIES FOR GROUP, SEX AND INTERACTION

Categories Favoring Non-institutionalized Retardates	Categories Favoring Institutionalized Retardates
female role	other
community	military
higher status	sign reject
family	danger theme
authority theme	
Categories Favoring Female Retardates	**Categories Favoring Male Retardates**
female role*	male role
	good*
	social place
	female theme
Categories Indicating an Interacting Effect Between Group and Sex	
social place*	good

*.05 one-tailed test of significance.

TABLE 12

DEVELOPMENTAL SENTENCE TYPE PERCENTAGES FOR THE NON-INSTITUTIONALIZED RETARDED GROUP

Subject#	Sex	Single-Word Utterances %	Two-Word Utterances %	Noun Phrases %	Constructions %	Kernal Sen. %	Unclassified %
1	F	.290	.046	.023	.076	.565	-
2	F	.225	.150	-	.167	.458	-
3	F	.530	.078	.022	.074	.296	-
4	F	.171	.060	-	.094	.667	.008
5	F	.461	.140	.005	.088	.306	-
6	F	.203	.135	.045	.053	.564	-
7	F	.348	.091	.030	.068	.462	-
8	F	.411	.080	.029	.051	.429	-
9	F	.491	.136	.004	.044	.325	-
10	F	.231	.145	.017	.051	.556	-
11	M	.154	.235	.013	.034	.564	-
12	M	.318	.162	.011	.078	.413	.017
13	M	.336	.134	.013	.087	.429	.007
14	M	.237	.160	.019	.115	.455	.013
15	M	.336	.157	.007	.116	.377	.007
16	M	.212	.275	.069	.100	.337	.006
17	M	.437	.158	.027	.055	.322	-
18	M	.180	.098	.007	.180	.534	-
19	M	.329	.180	.019	.037	.429	.006
20	M	.226	.106	.042	.099	.528	-
Total		6.126	2.726	.402	1.667	9.016	.064
Means		.30	.1363	.0201	.0833	.4508	.0032

TABLE 13

DEVELOPMENTAL SENTENCE TYPE PERCENTAGES FOR THE INSTITUTIONALIZED RETARDED GROUP

Subject#	Sex	Single-Word Utterances %	Two-Word Utterances %	Noun Phrases %	Constructions %	Kernal Sen. %	Unclassified %
1	M	.248	.140	.013	.101	.497	-
2	M	.308	.141	.064	.083	.404	-
3	M	.104	.139	.017	.209	.530	-
4	M	.366	.180	.012	.074	.366	-
5	M	.214	.357	.027	.104	.286	.011
6	M	.226	.107	.038	.101	.528	-
7	M	.190	.095	.012	.143	.548	.012
8	M	.158	.074	-	.105	.663	-
9	M	.264	.190	.006	.167	.373	-
10	M	.154	.096	.019	.144	.586	-
11	M	.374	.203	.033	.093	.297	-
12	M	.377	.099	.010	.110	.403	-
13	F	.271	.079	-	.093	.557	-
14	F	.197	.113	.070	.091	.528	.007
15	F	.225	.077	.008	.140	.543	.008
16	M	.321	.114	.023	.053	.489	-
17	F	.230	.057	-	.066	.639	.008
18	M	.229	.086	.076	.105	.505	-
19	M	.152	.127	.008	.144	.568	-
20	M	.237	.141	.007	.074	.541	-
Total		4.845	2.615	.443	2.200	9.851	.046
Means		.2422	.1307	.0221	.1100	.4925	.0023

TABLE 14

STATISTICAL LEVELS OF SIGNIFICANCE FOR ANALYSIS OF COVARIANCE AND SIGNED RANK* TESTS IN DEVELOPMENTAL SENTENCE TYPES BY GROUP, SEX AND INTERACTION

Type of Syntactical Construction	Group		Sex		
	Inst.	Non-Inst.	F	M	Inter.
Single-Word Utterances		.05	-	-	-
Two-Word Utterances	-	-		.02	-
Noun Phrases	-	-	not tested		not tested
Constructions	-	-	-	-	-
Kernal Sentences	-	-	-	-	-
Unclassified	not tested		not tested		not tested

the Vineland, Two-Factor Index of Social Position, and I Feel - Me Feel perceptual scale were presented. Within the language variables, several of the content categories were found to vary significantly with respect to group, sex and interaction. A final syntactical analysis was statistically analyzed with group and sex showing differences on two of the developmental syntax categories. The results of these various analyses are discussed at length in the following chapter.

CHAPTER V

DISCUSSION

Discussion of Non-language Variables

The Vineland Social Maturity Scale results indicated that the majority of the retardates, in both the institutionalized and non-institutionalized groups, scored higher in social maturity when contrasted to their IQ scores. Both groups had a mean IQ score of 65 whereas the non-institutionalized and institutionalized groups respectively had Vineland mean scores of 79 and 91. This would appear to indicate that social maturity, as measured by the Vineland, is ahead of cognitive ability in retarded children. This may well reflect that social maturity development is stressed by adults controlling the retarded child's environment. Natural parents, cottage parents, special education teachers, etc. apparently make exceptional efforts to insure that educable retarded children develop to their maximum potential in social skills. The retarded child who can use a table knife for cutting or who bathes himself unaided lessens the work load of the adults responsible for his well-being.

While the social maturity scores are ahead of the IQ scores, there is a strong positive relationship between Vineland and IQ scores $P < .001$ as measured by the IQ covariate on the analysis of covariance. Thus, the child with a higher IQ is much more likely to attain a significantly higher social maturity score. It has been the clinical experience of this investigator to observe that lower IQ retardates have a greater tendency towards a biological organic pathology as opposed to a familial-cultural type of retardation. These biological constraints, for example in the case of microcephaly, apparently place definite restrictions on the potential IQ amendable to environmental habilitation. Carrying this a step further, with the strong relationship between IQ and Vineland scores, it would seem reasonable to assume that higher IQ retardates have a much greater potential in the area of social maturity.

A final observation revealed a significant difference $P < .01$ between the institutionalized and community retardates with the institutionalized scoring higher on the Vineland. A cursory evaluation of this difference might suggest that the institutional environment provides greater opportunities for social development in the retarded child. While this may be valid, a more realistic explanation may rest in the reliability of the institution informants' observations. The exceptionally wide range in the institutionalized retardates' Vineland scores would tend to support

this hypothesis. In the opinion of this investigator, the parents of the non-institutionalized retardates were more reliable as informants in comparison to the cottage parents reporting on the institutionalized retardates. The cottage parents had difficulty with many items and often appeared to offer opinion rather than having definite knowledge on a child's ability with respect to specific Vineland items. This is quite understandable due to a rather large cottage parent to resident ratio. In addition many of the Vineland items had to be scored N.O. (no opportunity) due to the nature of the institutional environment. For example, such items as "eats with fork" and "uses table knife for cutting" were inappropriate with respect to one of the cottage environments where the children ate with spoons. Other items such as "goes about neighborhood unattended" and "goes about home town freely" were also difficult to evaluate because of the institutional setting. A further explanation for the higher Vineland scores for the institutionalized retardates may rest with the psychology of the interviewer-informant relationship. The various Vineland items fall within the direct responsibility of the cottage parents, trainers and supervisors who were the informants for the institutionalized retardates. The informants may have tended to exaggerate in order to present a more positive picture of social development progress in the children falling under their supervision. While the possibility

exists that institutionalized retardates have greater social competence than non-institutionalized retardates, this investigator is inclined to believe that the nature of the informants for the institutionalized retarded children, and the test instrument itself, may have caused the significant differences between the two groups. A different type of social maturity scale might be more appropriate for use with institutionalized children.

A second non-language variable, comparing the institutionalized and non-institutionalized retardates, was social position as measured by the Two Factor Index of Social Position. This index measured the environment as represented by the social position of a major adult figure in the retarded child's life. Results of this analysis revealed a significantly higher ranking in the social position of the institutionalized children's substitute parental figures in contrast to the natural parents of the non-institutionalized retarded children.

Examination of Table 7 indicates that the average formal educational level of the parent substitute for the institutionalized child attains a level over two years above that of the major adult in the non-institutionalized child's family. Furthermore, comparison on occupation generally reveals a higher mean level of employment among the surrogate parent substitutes involved in the environment of

the institutionalized child. Many of the parents of the community retardates had low level employment such as dish washer, truck driver, welfare, etc.

It would be hazardous to hypothesize any sweeping generalizations from only a two-factor social position index, eliminating such important variables as income, residential environment and educational opportunities (quality of available academic schooling). In addition, there is the problem of a limited number of subjects in the samples. However, some tentative ideas might be advanced from this analysis. It would seem reasonable to assume that the institutionalized retarded child might have a slight advantage in overall habilitation by being exposed to adults with a higher social position.

In specific reference to language development, the studies of McCarthy (1930, 1946), Day (1932), Davis (1937) and Templin (1957) indicate advantages for children coming from higher social position families. While the parental social position differences between the two groups of retarded children in this study are not as great as those differences in the above studies, there is nevertheless a significant difference favoring the institutionalized retardates.

This apparent advantage for the institutionalized children, with respect to the higher social position of the

surrogate parents, might be negated to a certain extent by the higher adult to child ratio found within the institutionalized population. In the institution there may not be as much opportunity for adult/child language interaction as compared to the non-institutionalized retarded children living at home. McCarthy (1946) reported distinct advantages for children provided with a greater opportunity for association with adults. Both McCarthy (1930) and Smith (1935) found advanced language patterns in children involved in situations with adults when contrasted to children interacting more with other children.

If the goal of improved speech and language is to be obtained among the retarded, it might be well to consider the following recommendations. Among the non-institutionalized, efforts should be made to raise the environmental social position of the parents of these children. The war on poverty including such features as a guaranteed annual wage, preschool day care programs and increased remedial educational and job opportunities for deprived adults should be supported and perhaps expanded by federal, state and local governments. Within the institutions for the retarded, efforts should be placed on expanding adult and retarded child interactions. For example, the sponsor program, where interested community adults "adopt" retarded children and interact with them in social situations,

should be supported and expanded by the institution administration.

Tentative[4] results of the I Feel - Me Feel self-perception scale revealed no significant differences between the institutionalized and non-institutionalized groups. The covariates, sex and interaction, also revealed no statistical differences. In the overall scores, as reported in Table 8, there was very little difference between the mean scores of the institutionalized and non-institutionalized retardates. The five self-perception major categories in this scale are: general adequacy, peer, teacher-school, academic and physical. The majority of the individual scale items are closely associated with the school environment of elementary school age children. With this in mind the overall mean score of all the retarded children combined, as depicted in Fig. 1, is quite impressive. This mean score of 4.03 indicates that, while the retarded child's scores vary, there is a general feeling of "A Little Happy" with respect to the school environment. Apparently there is a generally good feeling towards school by the majority of retarded children. Possibly the training of the teachers, goals and general curriculum of both the institutionalized

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[4]The I Feel - Me Feel scale is currently in an experimental form. At the present time, research is being conducted with normal children to collect normative data and established validity and reliability.

academic school and the non-institutionalized special education classes are similar in many respects. A low pupil/teacher ratio, emphasis on the affective levels of interaction, and positive reinforcement by the teachers may contribute to this generally good feeling of self-perception by educable retarded children. Possibly there may be sufficient variability of retarded scores to permit standardization of this scale for retarded children. This would not have been the case if the average scores had polarized towards either of the end anchors (1 or 5) of the scale.[5]

The I Feel - Me Feel scale might eventually prove to be a useful tool in the evaluation of specific special education programs and classrooms. In addition, diagnostic information on individual children might be useful to the special educator in individualizing certain areas of self-perception to the educable retarded child. This is not meant to imply that there are no problems in using the I Feel - Me Feel scale with retarded children. For example, it was found that this scale had to be administered on an individual basis to educable retarded children with a range of IQ scores from 46 to 80. This is in sharp contrast to

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[5]The I Feel - Me Feel section of this research is being conducted as a joint effort with Dr. B. N. Cage of the College of Education, University of Florida. Additional, more extensive, statistical and interpretive analyses of the I Feel - Me Feel data are being planned as a followup to these preliminary results.

normal children to whom the scale may be administered on a group basis. Approximately 20 minutes per child is required when administering this scale on an individual basis. However, this scale is easy to give and a paraprofessional or teacher's aid could do a reliable job administering this scale. The possibility also exists that this scale may not generally be effective with retarded children having an IQ below 45. This investigator experimentally tried to administer the I Feel - Me Feel to two lower grade retardates with poor results.

In summary, the I Feel - Me Feel scale appears to have good potential as a self-perception measuring device with retarded children.

Discussion of Language Variables

Content Analysis

Categories favoring non-institutionalized retardates.--Groups of matched institutionalized and non-institutionalized retardates were compared on the content areas of the Harvard III Dictionary. Results of the statistical analysis, as presented in Table 11, indicated the content categories of female role, community, higher status, family, and authority theme were more prevalent in the verbal language of non-institutionalized retardates.

The female role, favoring the community retardates, consisted of words such as "mother, mama, her, she, woman, wife,

sister and girl." This seems quite logical due to the involvement that the non-institutionalized retardates had in a regular family environment. The community retardates were also favored in the use of words within the category of community at the .01 level as compared to institutionalized retardates. Words such as "hello, name, people, park and hi" are representative of the lexical items labeled with the community tag. In reviewing the words in this category and in considering the high degree of significance (.01), it can be safely assumed that non-institutionalized retarded children have a greater opportunity to interact within the community. Under the status connotations higher status also favors the non-institutionalized retardates at the .01 level of significance. This is a second-order tag that reflects mostly the higher frequency of family words such as "daddy, father, mother, and mama." Another category statistically favoring the community retarded children was the family category. Such nouns as "mother, mama, daddy, and brother" were much more common in the conversational language of the non-institutionalized retardates. Again, this would be expected due to the family environment of the non-institutionalized retardates. The final second-order category favoring the non-institutionalized group is the authority theme category significant at the .01 level. The prevalent word among the community retardates placed in this

category was "daddy." It can be easily observed that the expected reference words about family members, in the verbal language of non-institutionalized retardates, transcends across the referent tags of female role, higher status, family, and authority theme. The heavy incidence of the words "mother" and "father" and their associated synonyms are clearly weighted in favor of the non-institutionalized child. The many denotative and connotative meanings of these words are reflected in the majority of content themes favoring the non-institutionalized retardates.

However, it should be stressed that the institutionalized retardates apparently have substitute words that closely approximate "mother" and "father" but these substitute words were not coded by the computer content analysis. The referents "Miss Jones,"[6] "Mr. Smith," etc. were commonly used among the institutionalized retardates in talking with or about cottage parents, trainers and supervisors. These terms were not coded by the General Inquirer and, hence, were not given any content category assignments.

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[6]An interesting subjective observation is that apparently all married female cottage parents are given the title "Miss" as opposed to "Mrs." by the institutionalized retarded children. This, apparently, is condoned and may reflect an extensional agreement between the cottage parents and children to dispense with the phonemically more difficult double sibilant "Mrs." A more subtle explanation might lie in the subconscious minds of the children. The use of the term "Miss" on the part of the institutionalized retardates might be a defense mechanism denying the existence of any outside family life for the surrogate cottage parents.

A strong possibility exists that if these surrogate parental terms had been assigned the content categories for "mother" and "father" there would not have been any differences between the institutionalized and non-institutionalized groups on female role, higher status, family, and authority theme. A follow up study will be necessary in order to fully resolve this issue.

Categories favoring institutionalized retardates.--Four content categories were found to occur more frequently in the verbal language of institutionalized retardates. The categories are other, military, sign reject and danger theme.

The other category includes words such as "you, your, them, and they." Since the statistical significance for this category reached the .01 level, it is unlikely that this is a Type 1 error. While the institutionalized retardates may know the proper names of their fellow residents, apparently they prefer the less specific pronoun words when talking with their peers in the institutional cottages, as contrasted to the smaller number of siblings found in the family constellations of the non-institutionalized retardates. The institutionalized retardate, apparently, is more prone to say, "Hey you come here," as opposed to "Hey Billy come here."

However, this should not be interpreted to infer that institutionalized retardates have more difficulty in peer

relationships as compared to non-institutionalized retardates. On the contrary, the I Feel - Me Feel scale has several items relating to peer relationships and, while individual item statistical tests were not performed, a cursory examination indicates rather good peer relationships among the institutionalized retardates.

The military content category was significantly higher in the verbal language of the institutionalized retardates. This category is represented by such words as "shoot and gun." Two of the cottages contained pocket billiard tables and such terms as "You shoot the eight ball" were quite common. This system tags words without respect to syntactic environment and the "shoot" in "You shoot the eight ball" is tagged military. Thus, it would appear inappropriate to attach any interpretive significance to the military content category favoring the institutionalized retardates.

A third category favoring the institutionalized retardates is sign reject under Psychological Themes. According to the Harvard III Dictionary, words in this category are supposed to imply interpersonal rejection -- "anger, betray, jealousy, sulk, etc." However, in contrast this category includes mostly words such as "leave, out, go, and shoot" found in the verbal corpus of the institutionalized retarded children. Typical sentences include "Did you leave that out?" "My jacket is out there." This investigator does not feel that the typical words used by the

institutionalized retardates in the sign reject category imply interpersonal rejection. It does not appear valid to attach any significance to this theme with respect to differences between the institutionalized and non-institutionalized retarded children.

Within the psychological themes, the institutionalized also had a significantly higher score $p < .05$ on the danger theme. These are words connoting alarm or concern with danger (blast, deviant, warn, etc.). Such words as "might, lions, bears, guns, outside, red, winter, fire, trouble, cut," etc. that were used by the institutionalized retardates were tagged with the danger theme. The word "cut" was a very common slang word among the institutionalized retarded -- "Barry done cut up." The reference to animals was primarily on the story-telling basis, e.g., telling the cottage trainer about the Three Bears. Some questions might also be posed concerning the placement of words such as "red, winter, and outside" under the danger category. Following the Harvard Dictionary definition of the danger theme, this investigator is inclined to believe that this category does not represent a valid difference between institutionalized and non-institutionalized retardates.

In reviewing the content categories favoring the institutionalized retardates, the other tag reflects the institutionalized child's use of non-sex-specific pronouns in

adapting to a large number of peers found in the cottage environment. The military, sign reject, and danger theme appeared to reflect semantic ambiguities within the language of the institutionalized retarded children as opposed to any real differences between the control and experimental groups of retarded children. It would be advantageous in a follow-up study to do a manual analysis of these three tags in both groups of children eliminating all of those words with semantic ambiguity.

Categories favoring male retardates.--Four content categories -- male role, social place, good, and female theme -- were found to significantly favor the male retardates.

The male role content category, dealing with all roles specifically denoting male reference, was found to be significantly, $p < .05$, more frequently in the verbal language of male retardates. High frequency male role words include "man, he, him, sir, brother, boy, daddy, and his." Quite logically, apparently due to their sex identification, retarded boys' conversation evolves more around masculine themes in contrast to their retarded female peers.

Social place words were also more prevalent in the verbal content of male retardates. The social place content category represents buildings and building parts, political, social, and economic locations. Examples of words

falling under this category, used more by male retardates, include "door, home, somewhere, town, cottage, clean, hall, places, gate, city, bed, yard, and school." Of particular interest is the observation that there is a significant interacting variable in the analysis of covariance of social place. On a one-tailed test we find that $p < .05$ (observed $t = 1.71$; table $t = 1.69$). Many of these social place words relate to the cottage environment so familiar to the institutionalized retardates. With 16 out of the 20 institutionalized retardates being male, this investigator feels that the interaction effect is significant with respect to a higher incidence of social place words being found among the institutionalized male retardates. This appears to be borne out by the means of the groups with the 16 male institutionalized retardates having the highest mean incidence of social place words. Much of the institutionalized retardate's life revolves around the cottage and its environment. They play, work, and live in the cottage and this is reflected in their conversational language.[7]

The good category, under Psychological Processes, reached a statistical level of significance favoring the male retardates $p < .05$ (observed $t = 1.78$, table $t = 1.69$) on a

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[7] At the time the data were gathered, the academic school classes at the institution were temporarily in suspension due to a curriculum reorganization. Thus, the children were spending even more time in the institutional cottage environment.

one-tailed test. In addition the interaction covariate was significant and a further interpretation of the data revealed that, like social place, the male institutionalized retardates have the highest mean average of words in the good category. These include words such as "alright, right, clean." The most popular word by far appeared to be "right" and it was used extensively by these male retardates. The word "right" is one of the most semantically diffuse words in the English language and in the opinion of this investigator it would be hazardous to imply any significance with respect to the good content category appearing more in the verbal language of the male institutionalized retardates.

The final content category favoring the male retardates is the female theme. Female theme falls under the psychological themes found in the second-order tags of the Harvard Dictionary. This theme represents psychoanalytic symbols of femininity (blood, button, velvet, etc.). The authors of the Harvard Dictionary present a description that should be considered in analyzing this theme:

> The first Harvard dictionary included oral, anal and genital categories which comprised words denoting the standard psychoanalytic symbols of sexuality relating to these modes. These categories were abandoned as impractical in subsequent revisions. They were replaced with the present tags, male, female, and sex theme. Both direct and symbolic references are included in these tag lists. Our experience suggests that the direct entries are useful for indicating an overt interest in sexuality, but that the attempt to pick up latent imagery has not been successful. It

> may well be that there is no extensive common language of sexual symbolism so that the attempt to score imagery in this way is not possible, alternatively, it may be that the lists need to be far more extensive than they are at present. (Dunphy, p. 185)

Words tagged with the female theme used by males in this study include "kitty, cat, white, home, chicken, cream, doll, water, and soft." It appears that the majority of these words would fall within the latent-imagery level of psychoanalytical theory as mentioned by Dunphy. One intriguing interpretation of these results might indicate that retarded males have a significant subconscious preoccupation with the female sex through symbolic words. However, as Dunphy indicated, efforts to deal objectively with latent imagery have not been successful. It is the belief of this investigator that there is a strong possibility of a Type 1 error involved with the statistical analysis on female theme. When accepting a .05 level of significance, there is a one in 20 chance of committing this type of error.

Categories favoring female retardates.--Only one content category, female role, $p < .05$ (one-tailed), was found to significantly favor the female over the male retardates. In this study female role words included "girl, sister, mother (and its derivatives), her, and lady." Due to their sex identification, retarded girls tend to use more feminine gender words in their propositional speech.

Syntactic Analysis

Table 14 presents the statistical results for the developmental sentence type syntactical analysis. Two significant statistical differences are noted in this table.

The first difference indicates that the group of non-institutionalized retardates uses more single-word responses than the institutionalized group. A review of the higher frequency single-word utterances of the non-institutionalized retardates indicated that some of the most frequent one-word responses include "mama, daddy, yes, cookie, what?, huh?, and yeah." In addition names of various pets were frequently used by these children. While an objective numeric count was not attempted, this investigator believes that the word "mother" and its derivatives would alone account for the single-word differences between these two groups of retarded children. The word "mother" was used in many ways, including interrogative and imperative forms.

A second highly significant syntactical difference $p < .02$ indicated that the male retardates have significantly more two-word responses than the female retardates. While there was no significant interaction effect, a perusal of the raw data was done on a group by sex basis as the possibility exists that there might be a counter-balancing effect. Among the male institutionalized retardates were found such common two-word responses as "Miss Smith, Miss Jones, Miss Green." These responses were quite common in

referring to the female cottage parents. Other typical two-word utterances included "Yes maam" and "No maam." Possibly the institutionalized male retarded children, in contrast to the females, attempt to create more interaction with the substitute mother figures due to a greater psychological need for contact with a mother figure.

Turning to the non-institutionalized male retarded children, again it was found that "yes maam" and "no maam" were common expressions. These are used generally as answers to questions posed by their natural mothers. It appears that, like the institutionalized males, the non-institutionalized males may express more mother related two-word expressions when compared to female retardates. It was also noted that a surprisingly large number of these two-word expressions, among the non-institutionalized males, were related to talking to pets, chiefly dogs and cats. Such expressions as "here kitty, hi Lassie, yes kitty, here Muffin" were quite common. Possibly non-institutionalized males have more involvement with animals and, consequently, contract their verbal syntax when dealing with these pets.

A follow-up study by this investigator will be necessary to objectively quantify the impressions noted above concerning the single-word differences between the institutionalized versus non-institutionalized retarded groups, as well as the significant two-word differences between male and female

retardates. The one-and two-word differences reported in this study illustrate an important point. The referent or content of the words should be investigated when analyzing data through a syntactical development system. For example, in this study it would have been erroneous to state that the institutionalized retardates have a higher syntactical development level because they use fewer one-word responses.

Clinical and Research Implications

One of the immediate clinical applications of this study is related to the technique employed in collecting the verbal language samples from the retarded children. This "slice of life" FM wireless method for recording speech presents exciting possibilities for the speech pathologist working with normal as well as retarded children. This technique presents the best possible method for monitoring the child's speech and language carry-over into everyday activities.

Turning to social maturity, questions were raised concerning the reliability of the scores on the institutionalized retardates. Problems were encountered both with informant reliability and the instrument used in evaluating the Vineland scale. Possibly, interviewing two cottage parents, instead of one, would give better information. Or perhaps interviewing one of the child's teachers would give good supplementary information. In comparing social

maturity scales, Congdon (1969) contrasted the Vineland with the Cain-Levine Social Competency Scale for 23 trainable mentally retarded subjects in an institutional training program. Both scales indicated improvement in social competency but the Cain-Levine had the additional advantage of discriminating between areas of the program which corresponded to program emphasis. Possibly other social competency scales, such as the Cain-Levine would be more applicable with an institutional population.

Within the language measurements of this study, both the contentive and syntactical aspects, it was impressive to note the number of comparisons that did not show any significant differences between institutionalized and non-institutionalized retardates. In the content analysis, out of 76 comparisons, only nine categories demonstrated any significant differences. In the syntax analysis one out of the five contrasts was statistically different. The majority of these differences were found to be logically accounted for by the referent and syntactical dimensions and derivations of family words such as "mother" and "father" and the absence or prevalence of these words among the two groups of retarded subjects. There may indeed not be many verbal language differences between institutionalized and non-institutionalized retardates.

However, like all the previous language studies comparing institutionalized to community retarded children,

this study only investigated subjects in one institution. In a recent publication Klaber (1969) elaborated on this point:

> . . . It appears however, that while most residential facilities for the mentally retarded have some basic similarities, there are also many differences which affect the care, development, treatment, and growth of their residents. Institutions for the residential care of retardates are very complex systems which differ in their philosophy, goals, physical layout, size and the professional expertise of their staff, as well as in their basic attitudes toward child care. (p. 149)

Klaber conducted a study of six state institutions for the retarded studying the state of adjustment (happiness) conferred upon their charges. It was found that:

> . . . In our sample of six state institutions, Institutions C and D are ineffective institutions. These two agencies stand out in the consistent low rank they obtained on all measures. These completely independently gathered assessments are so consistent as to allay any doubts about the validity of this conclusion. Institution E emerges as clearly effective while F appears to be moderately effective.

The possibility exists that more extensive differences in verbal language might exist between retardates in different institutions than between institutionalized and non-institutionalized retardates. Clearly this is an area where future research in verbal language would be quite feasible.

In looking at sex differences, 34 contentive and syntactical measurements were compared with significant results obtained for only six comparisons. Both the syntactical and contentive differences appeared to be quite

logical. On the basis of this study, sex does not appear to be a very significant variable in studying verbal language in mentally retarded children.

The results of this study did support Pine's (1970) hypothesis that the General Inquirer content analysis system, in conjunction with the Harvard III Psychosociological Dictionary, can be used in studying deviant language pathologies. However, this would have to be in the form of controlled research studies. One major difficulty with the Harvard Dictionary concerns many of the categories and dictionary entries. A large percentage of these categories appears to be constructed around a psychoanalytical theory of behavior and interaction. Questions are raised concerning many of the content categories placed on lexemes found in the Harvard Dictionary. The word "lamb" is tagged religion and sign weak. Questions could certainly be raised as to whether a child is giving any subconscious considerations to these second-order tags when he says, "We got a pet lamb at home." Another example of questionable tagging for children's language is contained in the word "swing." This word is tagged with a second-order sex theme. It is difficult to imagine any valid denotative sex theme tagging for "swing" when a child says "I want to play on the swing." This raises another question concerning semantic ambiguity. While the tagged words in the Harvard Dictionary were

selected and tested to minimize semantic problems, unfortunately they still exist. At least for some of the higher frequency words, in any specially developed children's dictionary, it would appear essential to develop sophisticated environmental coding to cope with semantic switches. A left to right syntax "switching" along with morphological considerations might be built into a new children's dictionary. At a certain stage it might even be advisable to add supersegmental phonological data in order to assist in placing the most appropriate tags on each word. Another consideration would be to give qualitative weight to words being sorted into certain categories. Some words, depending on the theoretical basis being used, will be "stronger" that other words going into the same content category.

In order to study the referent area of language in children, a new dictionary, or series of dictionaries, should be constructed. Various prominent theories of human growth and development could provide the theoretical formulation for category construction. Cognitive stage level, perceptual, stimulus response, and operant behavior theories all offer possibilities for content category formulation. Data will have to be gathered on various age groups of normal as well as exceptional children in order to establish a valid children's content dictionary that will prove reliable in future research.

Two final subjective observations were made by this investigator in dealing with non-institutionalized and institutionalized retarded children. It was observed that the non-institutionalized retardates and their families share a great deal of very warm affective interaction. While these families were representative of lower socio-economic groups, perhaps lacking in cognitive skills, there appeared to be a great deal of mature understanding and communication among the family members.

The second observation deals with the institutionalized retardates. It appeared that this group had a greater need for attention and social reinforcement from adults than did the community retardates. Possibly this is the result of too many children and too few adults in the institutional environment. By adding more cottage parents, and other adults, to the institutional staff, this exceptional need for attention might be alleviated to a certain degree. Smaller, more home-like, living arrangements might also assist in a faster habilitation for the institutionalized retarded children.

CHAPTER VI

SUMMARY

Earlier studies indicated significant language differences favoring the non-institutionalized retardate when compared with his institutionalized peer. Later studies, while showing some differences favoring community groups of retardates, reported a large quantity of non-varying language variables between institutionalized and community retardates.

Up to this point no content or referent language study has been conducted between institutionalized and community retarded children. Recent advances have made available a computer content system that permits fast accurate tagging and tabulation for transcribed verbal language. The General Inquirer, with the associated Harvard III Dictionary, computer content system was selected to study the referent area of language between matched institutionalized and non-institutionalized retarded children. Additional measures in the form of syntax analysis and certain non-language variables were also selected for study between the two groups. These non-language variables included the Vineland Social Maturity Scale, Two Factor Index of Social Position

and the I Feel - Me Feel self-perception scale.

The control group consisted of 20 educable non-institutionalized mentally retarded children residing at home while the experimental group consisted of 20 matched retarded children in a state institution. Both groups were matched on IQ and age and the experimental group had a mean length of institutionalization of four years, six months. The control group consisted of 10 girls and 10 boys whereas the institutionalized group contained 16 boys and four girls. In addition five of the institutionalized children were black. Race was treated as a nuisance variable and covariance statistical procedures were used to control for sex and interaction in the later statistical analyses.

The experimental procedure consisted of two stages. For the control group Stage I data were gathered in a non-distracting environment at the schools the children attended. The experimental group data were collected in a special sound treated room in the academic building at the institution. This Stage I testing consisted of pure tone hearing testing, Snellen Illiterate E vision screening, the I Feel - Me Feel self-perception scale and at times portions of the Vineland Social Maturity Scale.

The second stage involved going directly into each child's place of residence for gathering verbal language samples. An unstructured technique utilizing an FM wireless

microphone was employed whereas the children go about their normal activities as their verbal language is recorded. The range of recording time, for each subject, was from one hour to three and one-half hours with the majority of recordings averaging approximately two hours. At the conclusion of the recording sessions, additional information, from the parents and surrogate cottage parents, was obtained on each child's functioning in relationship to the Vineland Scale. Information was also collected for the Two Factor Index of Social Position.

Data processing of the verbal language samples consisted of transcribing 500 word samples for each subject, or approximately 10,000 words per group. Efforts were made to insure good inter- and intra-judge reliability in completing these typescripts. Special editing of these typescripts was necessary in order to prepare them for computer analyses. The verbal data samples were entered on standard 80 column electronic data processing cards. Key punch reliability was checked by obtaining an 80 by 80 readout of all the key punched data. A random selection of language samples, including six samples from the institutionalized group and six from the non-institutionalized group, was then run through a special Frequency Word Listing Program. This computer program provided a special alphabetic printout, by frequency, of all the words contained in the 12

samples. The printout from this program was then compared with an alphabetic printout of the Harvard Dictionary. These high frequency words from the retarded children's language samples, not occurring in the dictionary, were then coded, key punched and inserted into the Harvard Dictionary. A total of 32 high frequency retarded children's words were added to the dictionary. At this point the verbal samples were processed, individually by subject, through the General Inquirer and a content tag tally was obtained.

Using a system developed by Lee (1966), all the syntactical units were manually coded and tabulated. Two additional categories, single-words and unclassified, were used to augment this system.

For the majority of variables an analysis of covariance statistical procedure proved quite appropriate. On the Vineland scale a difference $P < .01$ existed between the institutionalized and community retardates with the institutionalized scoring significantly higher. The Hollingshead Two Factor Index of Social Position revealed that the social position of the institutionalized children's surrogate cottage parents was significantly higher than the social position of the natural parents of the community based retardates. For the I Feel - Me Feel self-perception scale no significant differences were found between the institutionalized versus non-institutionalized, or between sexes

or in IQ, age, or interaction.

The dependent content language variables were computer sorted into 55 first-order and 28 second-order word concept categories from the Harvard III Psychosociological Dictionary. Categories favoring the control group included female role, community, higher status, family, and authority theme. The categories favoring the institutionalized retardates included other, military, sign reject, and danger theme. In the sex contrast the female retardates scored better on female role whereas the male retardates were favored in male role, good, social place, and female theme. The syntactical analysis revealed that the non-institutionalized had significantly more single-word utterances in contrast to the non-institutionalized group and males were found to have more two-word utterances when compared to females.

In discussing these findings, it was noted that the differences in the Vineland scores, between the institutionalized and non-institutionalized groups, suggest more of a problem in reliability than any inherent advantages for retardates in either type of environment. In considering the results of the Two-Factor Index of Social Position, it is evident that the average formal educational level of the parent substitute for the institutionalized child is over two years above that of the major adult in the non-institutionalized child's family. A further comparison on occupation

generally reveals a higher mean level of employment among the surrogate parent substitutes involved in the environment of the institutionalized child. From these results it might seem reasonable to assume that the institutionalized retarded child might have a slight advantage in overall habilitation by being exposed to adults with a higher social position. However, this apparent advantage for the institutionalized retardates might be negated by the higher adult to child ratio found within the institutionalized environment. While the results of the I Feel - Me Feel self-perception scale revealed no significant differences, the mean score of 4.03 indicates a generally good feeling toward school by retarded children. This scale might eventually prove to be a useful tool for use with educable retarded children.

In looking at the content analysis differences between the control and experimental groups, it was observed that the expected reference words about family members, in the verbal language of non-institutionalized retardates, transcend across the referent tags of <u>female role</u>, <u>higher status</u>, <u>family</u>, and <u>authority theme</u>. The heavy incidence of the words "mother" and "father" and their associated synonyms is clearly weighted in favor of the non-institutionalized child. However, institutionalized retardates apparently have substitute words that closely approximate "mother" and "father" but these substitute words were not

coded by computer content analysis. A strong possibility exists that if these surrogate parental terms had been assigned the content categories for "mother" and "father" there would not have been any differences between the institutionalized and non-institutionalized groups on female role, higher status, family, and authority theme. The community category including words such as "hello, name, people, park, and hi" was more numerous in the non-institutionalized group's language. This was accounted for on the basis that the non-institutionalized retarded children have a greater opportunity to interact within the community.

The content categories of other, military, sign reject, and danger theme favored the institutionalized retardates. In reviewing the content categories favoring the non-institutionalized, the other tag reflects the institutionalized child's use of non-sex-specific pronouns in adapting to a large number of peers found in the cottage environment. The military, sign reject, and danger theme categories appeared to reflect semantic ambiguities within the language of the institutionalized retarded children as opposed to any real differences between the control and experimental groups of retarded children.

Four content categories -- male role, social place, good, and female theme -- were found to significantly favor the male retardates. The male role related quite logically to

the sex identification of the retarded boys. Many of the social place words related to the cottage environment so familiar to the institutionalized retardates. The good content category contained some semantically diffuse words and it would be hazardous to imply any significance to this category appearing more in the verbal language of the male institutionalized retardates. No significance is placed on the female theme as there is a strong possibility of a Type I error.

Only one content category, female role, was found to significantly favor the female over the male retardates. Due to their sex identification, retarded girls tend to use more feminine gender words in their propositional speech.

The syntactic analysis illustrated that the group of non-institutionalized used more single-word responses than the institutionalized group. Apparently the word "mother" and its derivatives account for this difference. The male retardates use more two-word responses apparently because certain two-word responses created more interaction with substitute mother figures and more contact, among the non-institutionalized males, with pets.

One of the immediate clinical implications from this study is related to using FM wireless microphones for speech therapy with normal as well as delayed children. It was

also suggested that other social maturity scales, in contrast to the Vineland, may be more applicable in an institutional environment. Within the language measurements of this study, both contentive and syntactical, it was noted that there was a large number of comparisons which did not show any significant differences between institutionalized and non-institutionalized retardates. The majority of the differences that were found to be significant could be accounted for by the referent and syntactical dimensions and derivations of family words such as "mother" and "father." The possibility exists that more extensive differences in verbal language might exist between retardates in different institutions than between institutionalized and non-institutionalized retardates. On the basis of this study, sex does not appear to be a very significant variable in studying verbal language in mentally retarded children.

Problems were discussed with reference to the Harvard Dictionary and it was suggested that a new dictionary, or series of dictionaries, should be constructed for use with children. In final subjective impressions, it was first observed that the community retardates and their families share a great deal of very warm affective interaction. It was also observed that the institutionalized retardates had a greater need for attention and social reinforcement than the community retardates.

APPENDICES

APPENDIX A

THE HARVARD THIRD PSYCHOSOCIOLOGICAL DICTIONARY

by

Dexter C. Dunphy

(Taken from Ch. 5, Presentation of Three Content Analysis Dictionaries, pp. 170-186, *The General Inquirer*, Stone, Philip J., et al., The M.I.T. Press, Massachusetts Institute of Technology, Cambridge, Massachusetts, and London, England, 1966)

The Harvard III Dictionary is the work of a number of faculty members and graduate students at Harvard who took part in the General Inquirer project. The following persons were actively involved in the construction of the dictionary at various stages of its development: P. J. Stone, R. F. Bales, D. C. Dunphy, and D. M. Ogilvie at Harvard; Z. Namenwirth, now at the Department of Sociology, Yale; and W. McPherson, now at the Department of Sociology, American University.

Throughout the course of the General Inquirer project, the research team at Harvard has been evolving a general purpose dictionary for use in conjunction with research of a psychological and sociological character. This dictionary has now gone through three major revisions, the current revision first appearing in March 1963. . . . The dictionary is an attempt to apply an operational form of a general theory of action to the analysis of documents. Table 5.1 lists the tags in the Harvard III Dictionary, and Table 5.2 gives brief definitions of them and sample entry words. Following the samples, a number indicates the total number of entry words in the category.

. . . . . .

As the tags are listed, the left-hand column of first-order tags represents our categorization scheme for nouns. The right-hand column of first-order tags represents our categorization scheme for verbs, with the exception of the tags IF, EQUAL, NOT, CAUSE, GOOD, BAD, and OUGHT. The tags IF, EQUAL, NOT and CAUSE are primarily expressive rather than denotative of thought processes; and the tags GOOD, BAD, and OUGHT are denotative of evaluative and moral processes, but in most cases are not verbs. In addition, at the bottom is a set of categories under the heading *qualifiers*. These represent categories of modifiers that are applied to nouns or verbs.

Objects

Upon more detailed examination of the first-order classification, it is apparent that we have divided the world of objects up into three major areas; the social, cultural, and natural realms. By the social world, we mean references to *persons*, to *social roles*, and to *collectivities* and, in fact, these represent three subgroups within this area, as discussed in Chapter 4. References to SELF are to the individual self or first person singular. References to SELVES are to the inclusive self or first person plural. References to OTHER are to the words "you" and "they" and their derivatives. Thus, these three tags represent a classification of personal pronouns. However, "he" and "she" and their derivatives were classified for the purposes of this dictionary under MALE-ROLE and FEMALE-ROLE, respectively,

TABLE 5.1. Harvard Third Psychosociological Dictionary: List of Tags

FIRST-ORDER TAGS

OBJECTS

Social Realm

Persons
SELF
SELVES
OTHER(suggested additions: males, females)

Roles
MALE-ROLE
FEMALE-ROLE
NEUTER-ROLE
JOB-ROLE

Collectivities
SMALL-GROUP
LARGE-GROUP

Cultural Realm

Cultural Objects
FOOD
CLOTHING
TOOLS

Cultural Settings
SOCIAL PLACE

Cultural Patterns
IDEAL-VALUE
DEVIATION-VALUES
ACTION-NORM (norms)
MESSAGE-FORM
THOUGH-FORM (concepts)
NONSPECIFIC-OBJECT

Natural Realm
BODY PART
NATURAL OBJECT
NATURAL WORLD

PROCESSES

Psychological Processes

Emotions
AROUSAL
URGE
AFFECTION
ANGER
PLEASURE
DISTRESS

Thought
SENSE
THINK
IF
EQUAL
NOT
CAUSE

Evaluation
GOOD
BAD
OUGHT

Behavioral Processes

Social-Emotional Actions
APPROACH
GUIDE
CONTROL
ATTACK
AVOID
FOLLOW
COMMUNICATE

Instrumental Actions
ATTEMPT
WORK
MOVE
GET
POSSESS
EXPEL

QUALIFIERS

TIME REFERENCE
SPACE REFERENCE
QUANTITY REFERENCE
QUALITY(SENSORY) REFERENCE

TABLE 5.1. (continued)

SECOND-ORDER TAGS

INSTITUTIONAL CONTEXTS

ACADEMIC
ARTISTIC
COMMUNITY
ECONOMIC
FAMILY
LEGAL
MEDICAL
MILITARY
POLITICAL
RECREATIONAL
RELIGIOUS
TECHNOLOGICAL

*STATUS CONNOTATIONS**

HIGHER-STATUS
LOWER-STATUS
PEER-STATUS

PSYCHOLOGICAL THEMES

a. OVERSTATE
UNDERSTATE
b. SIGN-STRONG
SIGN-WEAK
c. SIGN-ACCEPT
SIGN-REJECT
d. MALE-THEME
FEMALE-THEME
SEX-THEME
e. ASCEND-THEME
f. AUTHORITY-THEME
g. DANGER-THEME
DEATH-THEME

*Assigned to roles only

TABLE 5.2. Harvard Third Psychosociological Dictionary (brief definitions)

FIRST-ORDER TAGS

Social Realm

Persons

SELF—all pronoun references to the personal self (I, me, mine, myself) 5

SELVES—all pronoun references to the inclusive self (we, us, ours) 4

OTHER—all non-sex-specific pronouns for other (you, yours, they, theirs) 7

Roles

MALE-ROLE—all roles with specific male references (actor, boy, brother, Christ) 35

FEMALE-ROLE—all roles with specific female references (actress, aunt, bride, daughter, fairy) 28

NEUTER-ROLE—all role names not connoting sex or occupations (baby, American, anybody, child) 83

JOB-ROLE—all roles with clear occupational reference, theoretically open to both sexes (agent, artist, author, captain) 72

Collectivities

SMALL-GROUP—groups in which members are usually able to have face-to-face interaction (agency, band, board, club) 21

LARGE-GROUP—collectivities usually too large for face-to-face interaction (administration, army, church) 44

CULTURAL REALM

Cultural Objects

FOOD—articles or types of food (bean, beer, candy, cherry) 37

CLOTHING—articles or types of clothing (button, dress, fur, garment) 30

TOOLS—instrumental objects or artifacts of any kind [broader category than hand toods] (bag, automobile, ambulance) 114

Cultural Settings

SOCIAL PLACE—buildings and building parts; political, social, and economic locations (abroad, America, bedroom, cabin) 118

Cultural Patterns

IDEAL-VALUE—culturally defined virtues, goals, valued conditions and activities (ability, able, beauty, bold) 179

DEVIATION—culturally devalued goals, conditions and types of activity (abnormal, blind, crazy, drunken) 70

ACTION-NORM—normative patterns of social behavior (agreement, business, commission, credit) 93

MESSAGE-FORM—names of communication media, in a broad sense including art objects and money (art, book, cash) 102

THOUGHT-FORM—units and sytles of reasoning (abstraction, basic, contrast, estimate) 59

NONSPECIFIC-OBJECTS—abstract references to objects [connoting intellectualization] (affair, aspect, capital, detail) 48

TABLE 5.2. (continued)

Natural Realm

BODYPART—parts of the body (arm, body, brain, cheek) 55
NATURAL-OBJECT—objects not made by man (plants, animals, minerals, fish) 70
NATURAL-WORLD—geographical places, weather reference and cosmic objects (air, beach, gulf, meadow) 71

Qaulifiers

SENSORY-REF—smells, colors, tastes, etc. (aloud, black, fresh) 67
TIME-REF—references to units and measures of quantity (add, any, big, exact) 122
SPACE-REF—references to spatial dimensions (about, ahead, back, bent) 116

Psychological Processes

Emotions
AROUSAL—states of emotional excitement (attitude, awaken, felt, habit) 40
URGE—drive states (dream, eager, incentive, intend) 21
AFFECTION—indicants of close positive, interpersonal relationships (admire, affection, charm, dear, flirt) 43
PLEASURE—states of gratification (cheer, delight, funny) 43
DISTRESS—states of despair, fear, guilt, shame, grief, failure or indecision (afraid, alarm, break, conflict) 120
ANGER—forms of aggressive expression (angry, boil, burn, detest) 31
Thought
SENSE—perceptions and awareness (appear, attend, aware, read) 50
THINK—cognitive processes (assume, choice, doubt, mind) 70
IF—conditional words (almost, chance, else, if) 28
EQUAL—words denoting similarity (alike, same, consist) 11
NOT—words denoting negation (cannot, not, differ, none) 19
CAUSE—words denoting a cause-effect relationship (affect, cause) 19
Evaluation
GOOD—synonyms for good (admirable, clean, fair, suitable)44
BAD—synonyms for bad (awful, bitter, cheap, crude) 39
OUGHT—words indicating a moral imperative (duty, ought, proper) 13

Behavioral Processes

Social-Emotional Actions
COMMUNICATE—processes of transmitting meaning (address, admit, answer, boast) 101

TABLE 5.2. (continued)

APPROACH—movement toward (arrive, attach, bring, brought) 48
GUIDE—assistance and positive direction (aid, allow, benefit) 66
CONTROL—limiting action (appoint, arrest, bind, bound) 44
ATTACK—destructive, hostile, action (annoy, attack, beat, betray) 110
AVOID—movement away from (abandon, absent, conceal) 53
FOLLOW—submissive action (agree, apology, consent) 40

Impersonal Actions

ATTEMPT—goal-directed activity, implying effort (aim, apply, bid, effort) 35
WORK—task activity (adjust, construct, cook, create) 82
GET—owning, consuming (belong, occupy, lock) 37
POSSESS—obtaining consuming (afford, attain) 41
EXPEL—ejecting(blew, cast, defecate, drop) 41

SECOND-ORDER TAGS

Institutional Context—specification of the social context of rules and actions

ACADEMIC (assignment, correct, teach, editor) 135
ARTISTIC (performance, charm, display, actress) 60
COMMUNITY (accustom, custom, tradition, visit) 70
ECONOMIC (business, cost, debt, finance) 134
FAMILY (engagement, marital, marriage, dear, marry) 77
LEGAL (agreement, trial, condemn, confirm) 68
MEDICAL (therapy, treatment, injury, sickness) 40
MILITARY (war, attack, fight, raid, uniform) 49
POLITICAL (appointment, partisan, taxation, campaign) 113
RECREATIONAL (sport, swam, band, trail, holiday) 79
RELIGIOUS (magic, ritual, devotion, pray) 80
TECHNOLOGICAL (job, ability, engineer, hunter, print) 106

Status Connotations—male, female, neuter, and job-rule status implications

HIGHER-STATUS (aunt, analyst, doctor, devil, opera) 70
PEER-STATUS (mate, bride, wife, fellow, lover) 24
LOWER-STATUS (baby, child, boy, mistress) 49

Psychological Themes

OVERSTATE—emphatic or exaggerated words, generally adjectives or adverbs [connotes a defensive style] (gratefully, terrible, badly, hopelessly) 208
UNDERSTATE—words, generally adjectives or adverbs, connoting doubt or uncertainty [connotes a defensive style] (tend, hesitate, fair, partially) 80
SIGN-STRONG—words connoting strength or capacity for action (magic, encouragement, professional) 222
SIGN-WEAK—words connoting weakness or incapacity for action (sorry, postpone, sank, shy, admit) 207
SIGN-ACCEPT—words implying interpersonal acceptance (encouragement, admire, appreciate) 168

TABLE 5.2. (continued)

SIGN-REJECT	words implying interpersonal rejection (anger, betray, jealousy, sulk) 272
MALE-THEME	psychoanalytic symbols of masculinity (limb, beast, cock, staff) 66
FEMALE-THEME	psychoanalytic symbols of femininity (blood, button, velvet, weep) 81
SEX-THEME	direct or indirect references to the sex act (engagement, attractive, embrace, kiss) 127
ASCEND-THEME	words associated with rising, falling, fire and water, indicating concerns relating to the Icarus complex (burn, arousal, awaken, assert) 271
AUTHORITY-THEME	words connoting alarm or concern with danger (blast, deviant, warn, stretch) 99
DEATH-THEME	words connoting dying, end (crush, degrade, burnt) 106

along with nouns such as husband and wife. On the basis of our experience with this, we have concluded that in the next revision of the dictionary, it would be advisable to make this classification more logically complete by separating the pronouns he and she and their derivatives from the roles. At the moment we find that because of a large count on pronoun references, the MALE-ROLE and FEMALE-ROLE tags are not sensitive to references to nonpronoun roles.

The tags relating to roles are given an assignment on the basis of whether they are sex specific or relate to the occupational structure of the society. NEUTER-ROLE, therefore, is essentially a list of ascribed roles which are not sex specific and do not relate to the occupational system. Sex attribution plays such an important part in our system primarily because the dictionary was originally constructed as a tool to analyze small-group interaction in groups where displacement phenomena play an important part. Therefore it was of particular importance to identify the sexual relevance, if any, of roles mentioned by those in the groups. Similarly JOB-ROLES particularly high-status JOB-ROLES, were likely to be the object of displaced feelings about the group trainer, and so this also seemed an important category for our purposes. This raises a basic question of the usefulness of these categories to researchers engaged in other problems. Our experience has been that the divisions are useful to other researchers and have a significance beyond that of the displacement phenomenon. . . .

As far as *collectivities* are concerned, we have divided them into two general categories of SMALL-GROUP and LARGE-GROUP on the

basis of the distinction between small face-to-face groups and the larger, more impersonal collectivities. Thus, SMALL-GROUP includes such words as clique, club, gang, team, while LARGE-GROUP includes army, church, college, population, society. This distinction was useful to us in small-group research, since it allowed us to differentiate between references to the group itself (along with other analogous groups) and the major institutional collectivities. . . .

We have defined the *cultural realm* as consisting of all the material and nonmaterial objects created by man. Within this area we make three major subdivisions: *cultural objects*, which are physical man-made objects; *cultural objects*, which are physical man-made objects; *cultural settings*, which are man-made milieux consisting essentially of complexes of physical artifacts; and *cultural patterns*, which are essentially the values, norms, and concepts of the society. This tripartite division is along the lines of the usual gross distinctions made by anthropologists in studying particular cultures.

We have further divided *cultural objects* into three main categories: FOOD, CLOTHING, and TOOLS. FOOD and CLOTHING are fairly straightforward lists, but the category TOOLS consists of all other concrete man-made objects, and therefore, the term TOOL has to be interpreted in a much wider sense than in ordinary usage. Apart from such regular tools as file, hammer, and knife, there are other artifacts such as ambulance (medical tool), weapon (military tool), and pen (academic tool). The practicality of this particular list is questionable unless the list is used in conjunction with second-order tags. FOOD and CLOTHING also present problems since they are relatively short lists and usually accumulate low or zero counts. Two factors contribute to this. The first is that the lists are extremely impoverished. Considering the wealth of words in the language referring to food and clothing which can be culled from the advertising sections of any newspaper, these lists are incredibly short. There is a second reason, however In most of the text we have analyzed, little attention is devoted to these basic essentials of life. It seems also that this must be a characteristic of those sources from which Thorndike-Lorge drew their word counts since we have included their high-freuqency words as the basic vocabulary for our dictionary. Thus, to add enough words in these categories to make a real difference to counts would take a large amount of storage space in the computer with little return per word. As we go into larger dictionaries, however, these categories need to be built up. . . .

There is just one tag under *cultural settings* in this dictionary; and as one user of the General Inquirer remarked, "This category includes everything from 'bath'to 'kingdom'." Originally there were two: BUILDING PART listed items of furniture such as bed, chair, bath, and SOCIAL SETTINGS listed words for other socially defined situations

such as prison, village. However, like TOOL, the entries on this list are more useful in conjunction with second-order institutional tags. . . .

In the area of cultural patterns, we accept the division proposed by Parsons and Shils (1954) between values, norms, and concepts. We recognize the existence of deviance in relation to values as well as positive values themselves. On the IDEAL-VALUE or positive-value list, we have such words as beauty, confidence, companionship, experience, and faith, while on the DEVIATION list we have words such as deviant, foolish, and wicked.

ACTION-NORM, as the name suggests, refers to norms guiding and controlling action. Ideally if we were to be consistent with the value categories, there should be an ANOMIE list to act as the opposite for the ACTION-NORM category. However, there seemed to be few high-frequency words to compose such a list.

Concepts are divided into three groups: MESSAGE FORM consists of nouns referring to types of objects involved in communication (for instance, speech, song, novel, message, money), while THOUGHT FORM entry words consist of a list of abstract nouns referring to thought processes (for instance, abstraction, analogy, belief, concept, topic, theory).

The tag NONSPECIFIC-OBJECT includes all nouns with vague referents, such as thing, piece, anything, stuff, phenomena. We have found empirically that a high rate of use of words in this category implies vagueness and when associated, as it often is, with OVERSTATE and UNDERSTATE, seems to indicate prose with a defensive quality.

Processes

The right-hand column of first-order tags refers to processes that are subdivided into the two major areas of *psychological* and *behavioral* processes. The psychological processes are divided into the familiar categories of *emotions* (affect), *thought* (cognition), and *evaluation* (conation). The area of behavioral processes is subdivided into *social-emotional* and *instrumental* actions.

Within the general class of *emotions*, we distinguish six kinds of emotions. AROUSAL consists of a list of words referring to a generalized state of emotional arousal (for instance, arousal, concern, curiosity, excitement, interest, passion). URGE refers to drive states where an object is implied: for instance, desire, intend, motivation, urge,want, wish. The other categories consist of two sets of opposites: AFFECTION-ANGER and PLEASURE-DISTRESS. AFFECTION

ANGER refer to the two opposite poles of affectional relationships: love and hate. AFFECTION includes such words as admiration, devotion, embrace, love, thank. ANGER includes such words as detest, dislike, hate,hostile. PLEASURE needs little explanation, for it is a very straightforward list of such words as cheerful, fulfill, pleasure, rapture. The DISTRESS category includes all references to unpleasure or pain, many of the words being related to anxiety, depression, and guilt.

Thought processes are represented chiefly by two important tags, SENSE and THINK. Words under the heading of SENSE refer to the process of perception, aware, conscious, gaze, perceive, recognize, smell, watch. Words under the heading THINK refer to processes of rational thought such as analyze, classify, conclude, consider, prove, reflect. The remainder of the tags under *thought* are expressive rather than indicative of thought processes; that is, they are words that imply cognitive processes rather than directly refer to them. Words listed under IF (for example, if, either, might, probably) imply consideration of alternatives involved in choice behavior. Words under EQUAL imply the process of determining similarity (alike, equal, identical, similar). The category NOT consists of words implying negation (no, none, not, nor), and CAUSE is a list of words connected with the issue of casusality (cause, consequency, because, result). Together with IF, EQUAL, and NOT, it is a category that indicates a set of rational processes is in operation ordering alternatives (if), classifying ideas as similar (equal), or dissimilar (not), determining causal sequences, and probably effects (cause).

EVALUATION

The psychological process of *evaluation* is represented by three tags: GOOD, BAD, OUGHT; the lists for GOOD and BAD are comprised of synonyms for these words. There is a close connection here between the IDEAL-VALUE and DEVIATION categories, but we decided to separate the categories, for one set seemed more cultural, the other more personal. The individual uses culturally provided values to make decisions, but the decision as to whether X is good or bad is his own. OUGHT words (conscious, duty, must, obligation, should) also imply evaluative processes and so OUGHT is included under this heading.

The area of behavioral processes is subdivided into social-emotional and instrumental actions. This follows the scheme advanced in action theory and embodied in one of the most widely used scoring systems for small-group behavior, Bales' Interaction Process Analysis (1950). The categories themselves, however, do not follow the IPA

model in detail because words rather than whole acts are being scored. IPA categories tend to be more complex in nature and could not be replicated by a simple tag count.

Social-Emotional Actions

In devising categories for the description of behavioral processes, we made use of a simplified version of Leary's scoring scheme (1957), which has been found useful in small-group studies and has received considerable support from factor analytic studies in the same area. The "Leary wheel" consists of a set of related and counterposed categories arranged in their relationship to the two main factors of domination-submission and affection-antagonism. Figure 5.1 shows the way in which we have attempted to construct categories to follow this model. It should be pointed out that the lower segment of the diagram has only one category (FOLLOW instead of the three the scheme logically requires. Our failure to find sufficient words to make three categories of the kind needed would suggest that there is a relative absence of such terms in the language. In addition, the tag COMMUNICATE is a generalized category of words referring to communication process but not specific in terms of the Leary scheme.

DOMINATION

Attack Guide

Control

ANTAGONISM Avoid Approach AFFECTION

Follow

SUBMISSION

FIGURE 5.1. Categories of socioemotional actions (derived from the Leary scheme).

Instrumental Actions

The categories of *instrumental action* were designed to represent consecutive stages in the work process. Thus, the cycle begins with ATTEMPT, continues with WORK and MOVE, proceeds to GET, culminates in POSSESS, and is concluded with EXPEL. The following lists show sample entry words under these categories:

ATTEMPT	WORK	MOVE	GET	POSSESS	EXPEL
attempt	build	chase	accomplish	eat	bury
bid	construct	fly	achieve	hold	discharge
compete	count	hurry	acquire	have	dispose
pursue	cultivate	move	attain	keep	expel
search	invent	raise	reach	occupy	hurl
venture	study	slide	seize	save	throw

When the categories were constructed, it was hoped that a systematic shift through them might appear over the course of work-group process in a manner analogous to the systematic shift in Interaction Process Analysis categories. We have found no evidence to support such a movement although no systematic study has been undertaken to confirm or disprove the hypothesis.

These categories seemed to be fairly straightforward lists of words when we constructed them. However, many of these words have multiple meanings, and a number of high-frequency words (for example, make, use, get) are also components of important and recurrent idioms. Consequently, counts on the categories can be misleading. As a result of this and similar problems with some other entry words in the dictionary, we have added idioms which we hope will solve the problem of multiple meaning for some of these words.

The final set of categories in the dictionary consists of lists of words used primarily to modify or amplify the meanings of nouns and verbs. We have classified entry words of this type into the familiar TIME, SPACE, QUANTITY, and QUALITY categories.

The first-order tags represent a set of mutually independent categories for classifying words according to their denotative meanings. Each entry word is included under one and only one first-order tag.

Second-order tags are designed to identify pervasive qualities of the text and thus to indicate significant generalized concerns with the external or internal worlds. Categories refer both to denotative

and connotative levels of meaning. They are not independent entities since the meaning of any entry word can be filled out with the addition of more than one second-order tag. The distinction between nouns, verbs, and qualifiers is not maintained at the second-order level.

Second-Order Tags

The left-hand column of second-order tags is subdivided into two general areas: *institutional contexts* and *status connotations*. *Institutional contexts* suggests the institutional character of objects and actions, while *status connotations* indicates important levels of hierarchial concern. The right-hand column lists a number of psychological themes indicating significant inner concerns.

Second-order tags fill out the limited meaning given by the assignment of a single first-order tag. When a word has been assigned a first-order tag (for instance, sword = TOOL), its meaning can then be enlarged with one second-order tag from within as many of each of nine subsets as seem relevant. The nine subsets are indicated in the table. Thus "sword" can have one, institutional context tag added if appropriate; in this case the proper tag would be MILITARY. If it describes a role, the entry word might be assigned a status connotation, for instance "queen" would be HIGHER-STATUS. Status connotations are not used for objects. Their psychological symbolic meanings can be given by adding not more than one tag from as many of subsets *b* through *g* as seem appropriate. In this case, we decided that sword = DANGER-THEME, MALE-THEME, SIGN-STRONG, MILITARY, TOOL.

Thus second-order tags are designed to transcend the object-action basis for classification used in the first-order section of the dictionary and to "fill out" additional levels of meaning.

Institutional Contexts

In typical sociological fashion, we have divided the external world into a number of institutional spheres that indicate the social contexts to which the speaker or writer is orienting himself. Our choice of these twelve contexts has been influenced by schemes found useful in other areas. The German philosopher Spranger, for instance, advanced a sixfold classification of values which was later incorporated into the "Allport-Vernon Study of Values" (Allport, 1961, 454). His six value areas were the theoretical, economic, esthetic, social, political, and religious. These correspond, respectively, to our ACADEMIC, ECONOMIC, ARTISTIC, COMMUNITY, POLITICAL, and RELIGIOUS tags. We have found it useful to distinguish an additional six contexts: FAMILIAL, LEGAL, MEDICAL, MILITARY, RECREATIONAL, and TECHNOLOGICAL.

These 12 institutional context categories can be used in two main ways. They may be used as simple indicators of relative concern; for example, we may find that of two writers we are comparing, the writing of one is primarily POLITICAL in emphasis, while the other's is primarily RELIGIOUS. Alternatively, these tags may be used in conjunction with first-order tags in the way suggested earlier. This results in contingency counts, which can reveal useful distinctions within first-order categories. We may find, for example, that our two writers are both high in referring to JOB-ROLES, but that one is primarily interested in COMMUNITY JOB-ROLES, while the other is primarily interested in RELIGIOUS JOB-ROLES; or again, that one is primarily interested in RELIGIOUS JOB-ROLES, while the other is primarily interested in FAMILY FEMALE-ROLES.

Status References

The assignment of status tags (higher, peer, and lower-status) poses a number of problems. Originally these tags were applied to any entry words where their use seemed appropriate. However, this resulted in their application to few words other than those referring to roles or collectivities, so that we decided to include only words referring to roles.

Psychological Themes

When the third dictionary was constructed, an attempt was made to set up tag lists which would measure important psychological themes. From the discussion of the thematic analysis in Chapter 2, it should be apparent that this was a rather naive and simplistic attempt. If a theme is essentially a conjunctive relationship between tags, as we have proposed, it cannot be measured by a simple tag count. In fact, we have found the usefulness of some of these tags to be limited and have moved in the direction of writing specialized dictionaries such as those for Need-Achievement and Icarianism. . . .

The OVERSTATE list consists of words which tend to enlarge and exaggerate the content of the communication, while the UNDER-STATE words tend to modify, restrict or "tone down" the content. Empirically, we have found these categories highly correlated with NON-SPECIFIC-OBJECT, which is a list of vague references to objects and another indication of unclear communication.

SIGN-STRONG and SIGN-WEAK and SIGN-ACCEPT and SIGN-REJECT were devised to operationalize two of the Osgood evaluative dimensions.

The first Harvard dictionary included ORAL, ANAL, and GENITAL categories which comprised words denoting the standard psychoanalytic symbols of sexuality relating to these modes. These categories were abandoned as impractical in subsequent revisions. They were replaced with the present tags, MALE, FEMALE, and SEX-THEME. Both direct and symbolic references are included in these tag lists. Our experience suggests that the direct entries are useful for indicating an overt interest in sexuality, but that the attempt to pick up latent imagery has not been successful. It may well be that there is no extensive common language of sexual symbolism so that the attempt to score imagery in this way is not possible; alternatively, it may be that the lists need to be far more extensive than they are at present.

ASCEND-THEME was designed to identify the concerns referred to by Murray (1955) as the Icarus Complex. It was included as a category here because Couch (1960) had found Icarianism to be a significant factor in his factor analysis of the psychological determinants of interpersonal behavior in small groups. The list of entry words is extremely long and includes words connoting fire, water, flying, falling, excitement, height, ambition. The degree to which these words, in fact, are related in a theme is an empirical question and, therefore, we have gone over to a specialized dictionary that examines the contingency relations among tags of this order.

AUTHORITY-THEME. This tag list is an attempt to measure authoritarianism through use of the normal verbal productions of individuals rather than by standard questionnaires. The list is made up of words with authoritative overtones, the theory behind the category being that a person concerned with authority would tend to use a high proportion of such words.

DANGER-THEME. The tag includes words that betray an underlying worry or anxiety. No attempt was made at the time to relate this category to other anxiety measures used in content analysis. To do this could be a profitable undertaking.

DEATH-THEME. The tag name DEATH-THEME is probably too dramatic. While this category includes references to death, the entries predominantly refer to ending or completion of activities. This was formed primarily because it was thought to be useful for the analysis of small-group processes. As the end of a group approaches, groups become very concerned with handling the disbandment of the group, and this tag was designed to pick up this concern.

SUMMARY

This presentation has outlined in some detail the existing classification system for entry words included in the Harvard III Dictionary. As far as possible, we have attempted to explain the rationale behind the present tag categories and, at the same time, give some insight into the dilemmas and complexities of dictionary construction. To review a dictionary such as this is to realize that the construction of a generalized dictionary is a continuous process guided by feedback from retrievals carried out on data to which the dictionary has been applied. It is only through modifications that a dictionary of this kind begins to assume a satisfying level of accuracy in categorizing text.

APPENDIX B

TWO-FACTOR INDEX OF SOCIAL POSITION

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Introduction

The Two Factor Index of Social Position was developed to meet the need for an objective, easily applicable procedure to estimate the positions individuals occupy in the status structure of our society. Its development was dependent both upon detailed knowledge of the social structure, and procedures social scientists have used to delineate class composition. It is promised upon three assumptions: (1) the existence of a status structure in the society; (2) positions in this structure are determined mainly by a few commonly accepted symbolic characteristics; and (3) the characteristics symbolic of status may be scaled and combined by the use of statistical procedures so that a researcher can quickly, reliably, and meaningfully stratify the population under study.

Occupation and education are the two factors utilized to determine social position. Occupation is presumed to reflect the skill and power individuals possess as they perform the many maintenance functions in the society. Education is believed to reflect not only knowledge, but also cultural tastes. The proper combination of these factors by the use of statistical techniques enable a researcher to determine within approximate limits the social position an individual occupies in the status structure of our society.

The Scale Scores

To determine the social position of an individual or of a household two items are essential: (1) the precise occupational role of the head of the household performs in the economy and; (2) the amount of formal schooling he has received. Each of these factors are then scaled according to the following system of scores.

I. The Occupational Scale

1. Higher Executives, Proprietors of Large Concerns, and Major Professionals

High Executives

Bank Presidents; Vice-Presidents
Judges (Superior Courts)
Large Business, e.g., Directors
Presidents, Vice-Presidents,
Assistant Vice-Presidents,
Executive Secretary,
Treasurer

Military, Commissioned Officers,
Major and above, Officials of the
Executive Branch of Government
Federal, State, Local, e.g.,
Mayor, City Manager, City Plan
Director, Internal Revenue
Directors, Research Directors,
Large Firms

Large Proprietors (Value over $100,000[1])

Brokers	Dairy Owners
Contractors	Lumber Dealers

Major Professionals

Accountants (C.P.A.)	Economists
Actuaries	Engineers (College Grad.)
Agronomists	Foresters
Architects	Geologists
Artists, Portrait	Lawyers
Astronomers	Metallurgists
Auditors	physicians
Bacteriologists	Physicists, Research
Chemical Engineers	Psychologists, Practicing
Chemists	Symphony Conductor
Clergyman (Professionally Trained)	Teachers, University, College
Dentists	Veterinarians (Veterinary Surgeons)

2. *Business Managers, Proprietors of Medium Sized Businesses, and Lesser Professionals*

Business Managers in Large Concerns

Advertising Directors	Office Managers
Branch Managers	Personnel Managers
Brokerage Salesman	Police Chief; Sheriff
District Managers	Postmaster
Executive Assistants	Production Managers
Executive Managers, Govt. Officials, minor, e.g., I.R.S.	Sales Engineers
	Sales Managers, National Concerns
Farm Managers	Sales Managers (over $100,000)

Proprietors of Medium Businesses (value $35,000-$100,000)

Advertising Owners (-$100,000)	Manufacturer's Representatives
Clothing Store Owners (-$100,000)	Poultry Business (-$100,000)
Contractors (-$100,000)	Purchasing Managers
Express Company Owners (-$100,000)	Real Estate Brokers (-$100,000)
Fruits, Wholesale (-$100,000)	Rag Business (-$100,000)
Furniture Business (-$100,000)	Store Owners (-$100,000)
Jewelers (-$100,000)	Theater Owners (-$100,000)

[1]The value of business is based upon the rating of financial strength in Dunn and Bradstreet's *Manual*.

Lesser Professionals

Accountants
Chiropodists
Chiropractors
Correction Officers
Director of Community House
Engineers (not college grad.)
Finance Writers
Health Educators
Librarians
Military, Commissioned Officers, Lts., Captains
Musicians (Symphony Orchestra)
Nurses
Opticians
Pharmacists
Public Health Officers (M.P.H.)
Research Assistants, University (Full-time)
Social Workers
Teachers (Elementray and High)

3. *Administrative Personnel, Small Independent Business, and Minor Professionals*

Administrative Personnel

Adjusters, Insurance
Advertising Agents
Chief Clerks
Credit Managers
Insurance Agents
Managers, Department Stores
Passenger Agents—R. R.
Private Secretaries
Purchasing Agents
Sales Representatives
Section Heads, Federal, State, and Local Government Officers
Section Heads, Large Businesses and Industries
Service Managers
Shop Managers
Store Managers (Chain)
Traffic Managers

Small Business Owners ($6,000-$35,000)

Art Gallery
Auto Accessories
Awnings
Bakery
Beauty Shop
Boatyard
Brokerage, Insurance
Car Dealers
Cattle Dealers
Feed
Finance Co., Local
Fire Extinguishers
5 & 10
Florist
Food Equipment
Food Products
Cigarette Machines
Cleaning Shops
Clothing
Coal Businesses
Convalescent Homes
Decorating
Dog Supplies
Electrical Contractors
Engraving Business
Dry Goods
Monuments
Package Store (Liquor)
Painting Contracting
Plumbing
Publicity & Public Relations
Real Estate

Small Business Owners (Continued)

Foundry
Funeral Directors
Furniture
Garage
Gas Station
Glassware
Grocery-General
Hotel Proprietors
Inst. of Music
Jewelry
Machinery Brokers
Manufacturing
Records and Radios
Restaurant
Roofing Contractor
Shoe
Shoe Repairs
Signs
Tavern
Taxi Company
Tire Shop
Trucking
Trucks and Tractors
Upholstery
Wholesale Outlets
Window Shades

Semi-Professionals

Actors and Showmen
Army M/sgt; Navy C. P. O.
Artists, Commercial
Appraisers (Estimators)
Clergymen (Not Professionally trained)
Concern Managers
Deputy Sheriffs
Dispatchers, R. R. Train
I. B. M. Programmers
Interior Decorators
Interpreters, Court
Laboratory Assistants
Landscape Planners
Morticians
Oral Hygienists
Photographers
Physio-therapists
Piano Teachers
Radio, T. V. Announcers
Reporters, Court
Reports, Newspaper
Surveyors
Title Searchers
Tool Designers
Travel Agents
Yard Masters, R. R.

Farmers

Farm Owners ($25,000-$35,000)

4. *Clerical and Sales Workers, Technicians, and Owners of Little Businesses (Value under $6,000)*

Clerical and Sales Workers

Bank Clerk and Tellers
Bill Collectors
Bookkeepers
Business Machine Operators, Offices
Claims Examiners
Factory Storekeeper
Factory Supervisor
Post Office Clerks
Route Managers (Salesmen)
Sales Clerks
Shipping Clerks

Clerical and Sales Workers (Continued)

Clerical or Stenographic
Conductors, R. R.
Employment Interviewers
Supervisors, Utilities, Factories
Toll Station Supervisors
Warehouse Clerks

Technicians

Camp Counselors
Dental Technicians
Draftsmen
Driving Teachers
Expeditor, Factory
Experimental Tester
Instructors, Telephone Co., Factory
Inspectors, Weights, Sanitary Inspectors, R. R., Factory
Investigators
Laboratory Technicians
Locomotive Engineers
Operators, P. B. X.
Proofreaders
Safety Supervisors
Supervisors of Maintenance
Technical Assistants
Telephone Co. Supervisors
Timekeepers
Tower Operators, R. R.
Truck Dispatchers
Window Trimmers (Store)

Owners of Little Business

Flower Shop ($3,000-$6,000)
Newstand ($3,000-$6,000)
Tailor Shop ($3,000-$6,000)

Farmers

Owners ($10,000-$20,000)

5. *Skilled Manual Employees*

Adjusters, Typewriter
Auto Body Repairers
Bakers
Barbers
Blacksmiths
Bookbinders
Boilermakers
Brakeman, R. R.
Brewers
Bulldozer Operators
Butchers
Cabinet Makers
Carpenters
Casters (Founders)
Cement Finishers
Glassblowers
Glaziers
Gunsmiths
Garage Workers
Hair Stylists
Heat Treaters
Horticulturists
Lineman, Utility
Linoleum Layers (trained)
Linotype Operators
Lithographers
Locksmiths
Loom Fixers
Lumberjacks
Machinist (trained)

Skilled Manual Employees (Continued)

Chease Makers
Chefs
Compositors
Diemakers
Diesel Engine Repair & Maintenance (trained)
Diesel Shovel Operators
Electricians
Electrotypists
Engravers
Exterminators
Fitters, Gas, Steam
Firemen, City
Foreman, Construction, Dairy
Gardeners, Landscape (trained)
Printers
Radio, T. V., Maintenance
Repairman, Home Appliances
Riggers
Rope Splicers
Sheetmetal Workers (trained)
Shipsmiths
Shoe Repairman (trained)
Stationary Engineers (licensed)
Stewards, Club
Switchmen, R. R.
Maintenance Foreman
Installers, Electrical Appliances
Masons
Masseurs
Mechanics (trained)
Millwrights
Moulders (trained)
Painters
Paperhangers
Patrolmen, R. R.
Patern and Model Makers
Piano Builders
Piano Tuners
Policeman, City
Postman
Tailors (trained)
Teletype Operators
Toolmakers
Track Supervisors, R. R.
Tractor-trailer Trans.
Typographers
Upholsterers (trained)
Watchmakers
Weavers
Welders
Yard Supervisors, R. R.

Small Farmers

Owners (under $10,000)
Tenants who own farm equipment

6. *Machine Operators and Semi-Skilled Employees*

Aides, Hospital
Apprentices, Electricians, Printers, Steamfitters, Toolmakers
Assembly Line Workers
Bartenders
Bingo Tenders
Building Superintendents (cust.)
Bus Drivers
Checkers
Clay Cutters
Coin Machine Fillers
Photostat Machine Operators
Practical Nurses
Presser, clothing
Pump Operators
Receivers and Checkers
Roofers
Set-up Men, Factories
Shapers
Signalmen, R. R.
Solderers, Factory
Sprayers, Paint

Machine Operators and Semi-Skilled Employees (Continued)

Delivery Men
Dressmakers, Machine
Drill Press Operators
Duplicator Machine Operators
Elevator Operators
Enlisted Men, Military Service
Filers, Benders, Buffers,
Foundry Workers
Garage and Gas Station Assistants
Greenhouse Workers
Guards, Doorkeepers, Watchmen
Hairdressers
Housekeepers
Meat Cutters and Packers
Meter Readers
Operators, Factory Machines
Oiler, R. R.
Paper Rolling Machine Operators
Stranders, Wire Machines
Strippers, Rubber Factory
Taxi Drivers
Testers
Timers
Tire Moulders
Trainmen, R. R.
Truck Drivers, General
Waiters-Waitresses ("Better Places")
Weighers
Welders, Spot
Winders, Machine
Wiredrawers, Machine
Wine Bottlers
Wood Workers, Machine
Wrappers, Stores and Factories

Farmers

Smaller Tenants who own little equipment

7. Unskilled Employees

Amusement Park Workers (Bowling Alleys, Pool Rooms)
Ash Removers
Attendants, Parking Lots
Cafeteria Workers
Car Cleaners, R. R.
Car Helpers, R. R.
Carriers, Coal
Countermen
Dairy Workers
Deck Hands
Domestics
Farm Helpers
Fisherman (Clam Diggers)
Freight Handlers
Garbage Collectors
Grave Diggers
Hod Carriers
Hog Killers
Hospital Workers, Unspecified
Hostlers, R. R.
Janitors, Sweepers
Laborers, Construction
Laborers, Unspecified
Laundry Workers
Messengers
Platform Men, R. R.
Peddlers
Porters
Roofer's Helpers
Shirt Folders
Shoe Shiners
Sorters, Rag and Salvage
Stagehands
Stevedores
Stock Handlers
Street Cleaners
Unskilled Factory Workers
Truckmen, R. R.
Waitresses—"Has Houses"
Washers, Cars
Window Cleaners
Woodchoppers

Unskilled Employees (Continued)

Relief, Public, Private Unemployed (no occupation)

Farmers

Share Croppers

This scale is premised upon the assumption that occupation have different values attached to them by the members of our society. The hierarchy ranges from the low evaluation of unskilled physical labor toward the more prestigeful use of skill, through the creative talents of ideas, and the manipulation of men. The ranking of occupational functions implies that some men exercise control over the occupational pursuits of other men. Normally, a person who possesses highly trained skills has control over several other people. This is exemplified in a highly developed form by an executive in a large business enterprise who may be responsible for decisions affecting thousands of employees

II. The Education Scale

The educational scale is premised upon the assumption that men and women who posses similar educations will tend to have similar tastes and similar attitudes, and they will also tend to exhibit similar behavior patterns. The educational scale is divided into several positions: (1) Graduate Professional Training. (Persons who complete a recognized professional course leading to a graduate degree are given score of 1). (2) Standard College or University Graduation. (All individuals who complete a four-year college or university course leading to a recognized college degree are assigned the same scores. No differentiation is made between state universities or private college.) (3) Partial College Training. (Individuals who complete at least one year but not a full college course are assigned this position. Most individuals in this category complete from one to three years of college.) (4) High School Graduates. (All secondary school graduates whether from a private preparatory school, a public high school, a trade school or a parochial high school, are assigned the same scale value.) (5) Partial High School. (Individuals who complete the tenth or the eleventh grades, but do not complete high school are given this score.) (6) Junior High School. (Individuals who complete the seventh grade through the ninth grade are given this position.) (7) Less than Seven Years of School. (Individuals who do not complete the seventh grade are given the same scores irrespective of the amount of education they receive.)

III. Integration of Two Factors

The factors of Occupation and Education are combined by weighing the individual scores obtained from the scale positions. The weights for each factor were determined by multiple correlation techniques. The weight for each factor is

Factor	*Factor Weight*
Occupation	7
Education	4

To calculate the *Index of Social Position* score for an individual the scale value for *Occupation* is multiplied by the factor weight for *Occupation*, and the scale value for *Education* is multiplied by the factor weight for *Education*. For example, John Smith is the manager of a chain supermarket. He completed high school and one year of business college. His *Index of Social Position* score is computed as follows:

Factor	*Scale Score*	*Factor Weight*	*Score X Weight*
Occupation	3	7	21
Education	3	4	12
	Index of Social Position Score		33

IV. Index of Social Position Scores

The Two Factor Index of Social Position Scores may be arranged on a continuum or divided into groups of scores. The range of scores on a continuum in from a low or 11 to a high of 77. For some purpose a researcher may desire to work with a continuum of scores. For other purposes he may desire to break the continuum into a hierarchy of score groups.

I have found that most meaningful breaks for the purpose of predicting the social class position of an individual or a nuclear family is as follows:

Social Class	*Range of Computed Scores*
I	11-17
II	18-27
III	28-43
IV	44-60
v	61-77

When the *Two Factor Index of Social Position* is relied upon to determine class status, differences in individual scores within a specified range are ignored, and the scores within the range are treated

as a unit. This procedure assumes there are meaningful differences between the score groups. Individuals and nuclear families with scores that fall into a given segment of the range of scores assigned to a particular class are presumed to belong to the class the *Two Factor Index of Social Position* score predicts for it.

The assumption of a meaningful correspondence between an estimated class position of individuals and their social behavior has been validated by use of factor analysis.[2] The validation study demonstrated the existence of classes when mass communication data are used as criteria of social behavior.

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[2]See August B. Hollingshead and Frederick C. Redlich, *Social Class and Mental Illness*, John Wiley and Sons, New York, 1958, pp. 398-407.

APPENDIX C

LANGUAGE SAMPLING PROCEDURE

Throughout the years at least three major methods have evolved for the collection of verbal language samples; structured, semistructured and unstructured. In the structured approach the examiner presents a situation calling for a forced choice from the subject. Berko's morphological study (1958) stands out as a classic illustration of this approach. In this study the child would be shown a picture of a nonsense animal with the examiner saying, "This is a Wug." Then pointing to a picture of two of these nonsense animals the examiner would say, "Now there is another one. There are two of them. There are two _____." This example was testing for the child's linguistic competence for the plural concept. In this highly structured approach investigators are usually restricted to looking at only a few aspects of one level of language.

In the semistructured approach the subject is asked to verbally describe a picture, or set of pictures, which is tape recorded. An example of this method was the use of picture cards from the *Thematic Apperception test* Murry, (1943) for gathering normative data for adults Jones, et al. (1963). Both the structured and semistructured language gathering procedures present problems regarding examiner influence on the subject. In particular, with children, anxiety may be present and this in turn may distort the verbal sample. Pine (1970), using content analysis, found several significant differences within children in contrasting a semistructured clinic setting to a nonstructured home environment.

This brings us to the unstructured or "slice of life" technique for gathering language. This method has an interesting history actually going back into the last century when the phoneticians would manually write down phonetic transcriptions in a nonobstrusive manner in their study of dialects and languages. Prior to the second World War the "potted palm artists" became quite active. These were investigators primarily concerned with gathering language samples of preschool and schoolage children. Typically these researchers would literally hide on the playground and manually record, in shorthand or longhand, the verbal language of children. With the advent of portable recording equipment, after WW II, a major technical breakthrough was achieved in language gathering methodology. The difficulty with these early tape recorders involved the ambient noise interference and limited pick-up range of the microphone. Children did not remain stationary but moved around, to a considerable degree, creating a fading voice signal.

A significant technical advance was utilized by Hutchinson (1967) wherein a transitorized FM wireless microphone was worn by children. The signal generated by this microphone-transmitter is received by an FM Receiver and fed into a magnetic tape recorder. This system offers the advantage of creating a true "slice of life" procedure in collecting verbal language data from children and is the method used in this study.

APPENDIX D

SYNTACTIC FREQUENCY DATA OF CONTROL AND EXPERIMENTAL GROUPS

SYNTACTICAL FREQUENCY DATA FOR CONTROL GROUP

Subject#	Sex	Single-Word Utterances	Two-Word Utterances	Phrases	Constructions	Kernal Sen.	Unclassified
1	M	53	29	3	6	69	1
2	M	23	35	2	5	84	0
3	F	72	14	9	9	75	0
4	F	38	6	3	10	74	0
5	M	32	15	6	14	75	0
6	F	46	12	4	9	61	0
7	F	112	31	1	10	74	0
8	F	89	27	1	17	59	0
9	F	27	17	2	6	65	0
10	M	57	29	2	14	74	3
11	M	80	29	5	10	59	0
12	M	50	20	2	13	64	1
13	M	24	13	1	24	71	0
14	M	49	23	1	17	55	1
15	F	27	18	6	7	75	0
16	M	37	25	3	18	71	2
17	F	27	18	0	20	55	0
18	F	122	18	5	17	68	0
19	M	34	44	11	16	54	1
20	F	20	7	0	11	78	1
Total		1019	430	63	253	1360	10
Means		50.9	21.5	3.1	12.6	68.0	.5

SYNTACTICAL FREQUENCY DATA FOR EXPERIMENTAL GROUP

Subject#	Sex	Single-Word Utterances	Two-Word Utterances	Noun Phrases	Constructions	Kernal Sen.	Unclassified
1	M	37	21	2	15	74	0
2	M	48	22	10	13	63	0
3	M	12	16	2	24	61	0
4	M	59	29	2	12	59	0
5	M	39	65	5	19	52	2
6	M	36	17	6	16	84	0
7	M	16	8	1	12	46	1
8	M	15	7	0	10	63	0
9	M	46	33	1	29	65	0
10	M	16	10	2	15	61	0
11	M	68	37	6	17	54	0
12	M	72	19	2	21	77	0
13	F	38	11	0	13	78	0
14	F	28	16	10	13	75	1
15	F	29	10	1	18	70	1
16	M	42	15	3	7	64	0
17	F	28	7	0	8	78	1
18	M	24	9	8	11	53	0
19	M	18	15	1	17	67	0
20	M	32	19	1	10	73	0
Total		703	386	63	300	1317	6
Means		35.1	19.3	3.1	15.0	65.8	.3

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BIOGRAPHICAL SKETCH

James Clark Montague, Jr. was born December 12, 1935, in Cincinnati, Ohio. After completion of early education and high school in Cincinnati, Jim Montague served for four years in the United States Air Force. After service he entered college and graduated in 1959 from Florida Southern College, Lakeland, Florida, receiving a BS degree with a double major in speech and business administration. For the next five years he was employed in the finance business.

In 1965 Jim Montague entered graduate school at the University of Florida pursuing the study of speech pathology and in 1967 received an MA degree from this university. For the next two years Mr. Montague was employed as a speech clinician at the Volusia Easter Seal Center, Daytona Beach, Florida. From 1969 until the present Mr. Montague has been a full-time graduate student working on a Ph.D. degree in speech pathology at the University of Florida.

Jim Montague holds the Certificate of Clinical Competence in speech pathology from the American Speech and Hearing Assn. and is a member of numerous other professional organizations.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Edward C. Hutchinson, Chairman
Associate Professor of Speech

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Thomas B. Abbott
Associate Professor of Speech

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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This dissertation was submitted to the Dean of the College of Arts and Sciences and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

June, 1971

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