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THE EFFECT OF HEADSTART ON DEVELOPMENTAL PROCESSES.

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DESCRIPTORS- *PROGRAM EVALUATION, *COGNITIVE DEVELOPMENT,
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DISADVANTAGED, *PRESCHOOL CHILDREN, TEACHER CHARACTERISTICS,
CONTROL GROUPS, BALTIMORE, MARYLAND, PPVT, DAP, PROJECT
HEADSTART,

AS PART OF AN EFFORT TO ASSESS THE EFFECT OF THE
BALTIMORE HEAD START PROGRAM ON COGNITIVE DEVELOPMENT,
CHILDREN ENROLLED IN THIS PROGRAM WERE GIVEN THE PEABODY
PICTURE VOCABULARY TEST (PPVT) AND THE DRAW-A-PERSON (DAP)
TEST AT THE START OF THE PROGRAM, AT ITS TERMINATION, AND
WHEN THEY ENROLLED IN KINDERGARTEN. A CONTROL GROUP, DRAWN
FROM THE SAME NEIGHBORHOODS, WAS TESTED AT KINDERGARTEN
ENROLLMENT. THE NUMBER OF CHILDREN TESTED IN EACH GROUP WAS
SLIGHTLY OVER 400. DATA ON THE FAMILIES OF THE HEAD START
CHILDREN INDICATED THAT THEY WERE SEVERELY DISADVANTAGED.
RESULTS OF THE PPVT SHOWED SIGNIFICANT GAINS DURING THE
PROGRAM AND BETWEEN THE END OF THE PROGRAM AND KINDERGARTEN
ENROLLMENT. THE CONTROL GROUP SCORED AT THE SAME LEVEL THAT
THE HEAD START CHILDREN HAD SCORED AT THE BEGINNING OF THE
PROGRAM. RESULTS OF THE DAP TEST SHOWED A SIMILAR PATTERN OF
GAINS, BUT WITH THE CONTROL GROUP SCORING AT THE SAME LEVEL
THAT THE HEAD START CHILDREN HAD SCORED AT THE END OF THE
PROGRAM. CLASSROOM EVALUATIONS OF TEACHER BEHAVIOR WERE MADE,
AND PRELIMINARY ANALYSES INDICATE THAT TEACHERS WHO WERE
RATED AS WARM, VARIED, AND FLEXIBLE AND WHO SPENT A
RELATIVELY HIGH PROPORTION OF TIME TEACHING PRODUCED THE
HIGHEST GAINS. (DR)

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The Effect of Headstart
on Developmental Processes*

by

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Reports by now numbering in the thousands have made abundantly clear a substantial association between social class and intelligence test scores, between social class and academic achievement, between social class and ultimate occupational status. What has long been a matter of dispute is the source of these associations. Some argue that those of lower intellectual endowment sink into the lower social classes and there produce children like themselves via assortative mating. Others maintain with equal fervor that the educational and domestic conditions of lower class life act upon a normally distributed initial genetic potential to depress performance via biological, motivational and cognitional mechanisms (1).

The usual methods for assessing the contribution of genetic factors, in particular selective breeding, are impossible in man. Purely observational studies suffer from the inherent limitation that the variables are confounded; the parents that give birth to the child are the parents who rear him in the very environment alleged to have a decisive impact. One way out of the dilemma lies in an experimental approach through the careful assessment of the effect of special environmental enrichment which, although never optimal because of practical considerations, should diminish the customary performance deficits to the extent that these deficits result from environmental factors.

Thus, Project Headstart, a national effort at educational intervention in the pre-school life of some 560,000 American children in the summer of 1965, afforded an unparalleled opportunity for field studies of an intellectual "polio vaccine." Despite our realization of the constraints on method and design that would be imposed by considerations of time, space, and staff, the members of our division of child psychiatry

agreed upon a self-imposed mobilization of effort to assess the effect of Baltimore's Headstart program on selected aspects of cognitional development in the children it enrolled. Some of our findings will be reported here; others will be described in subsequent papers.

METHODS

The Baltimore program enrolled some 480 children in public school classes and an additional 65 in a church nursery program. Each mother applying to the public schools was required to complete a brief form on which demographic data were recorded. Contrary to the demands of our original design, there were too few children in excess of available space to constitute an initial control group. We were therefore limited to a control selected from the same classes (and therefore the same neighborhoods) attended by our Headstart graduates when they were enrolled in public school in September. Our revised plan, then, included test measurements on Headstart children in June in the first week of the program (H-1), in August at its termination (H-2), and in September upon enrollment in kindergarten (H-3) and measurements on the controls only in kindergarten in September (C). Classes were limited in size to 15 children. Daily attendance in Baltimore exceeded 90%.

The necessity to examine large numbers of children within several days at each test interval limited us to measures that were brief and could be administered by rapidly trained non-professional volunteers, for whose recruitment we are indebted to the Red Cross. The tests employed were the Peabody Picture Vocabulary Test (PPVT) and the Draw-A-Person (DAP), both of which have been shown to correlate respectably with standard intelligence tests in middle-class populations (2,3). Moreover, satisfactory test retest reliability has been demonstrated for the PPVT in a comparison of non-professional and professional examiners 4).

As a second aspect of our general study, eight observers were trained individually to record ongoing teacher behavior in classrooms and to score this behavior for a number of variables. Each teacher was seen on four different occasions by four of the eight observers.

POPULATION CHARACTERISTICS

Fifty-one percent of the Headstart children came from families with total annual incomes of less than \$3000 (30% were on welfare); forty percent were in the \$3000 to \$5000 range (Table I). Sixty-two percent of the fathers and 57% of the mothers had no more than a tenth grade education and only 3% had more than 12 grades (Table II). Sixty-four percent of the fathers were unskilled workers; 38% of the mothers were single, widowed, divorced or separated. Only 7% of the children had had previous experience of day care. Clearly then we were dealing with a severely disadvantaged population.

TEST RESULTS

Figure 1 indicates the distribution of PPVT raw scores for the Headstart population in June before training and for the control population in September without training. The two curves are almost identical despite an age advantage of 10 weeks for the controls. However, inspection of the mean raw scores by month of age for the 712 children in both Headstart and control groups before training reveals a monthly rate of change so irregular and so small as to lead to no expectation of significant difference over this small time interval. Thus, these data permit the conclusion that the Headstart and control populations did not differ in vocabulary before the summer experience.

Figure 2, however, demonstrates progressive and substantial gains at each successive testing for the Headstart group.

Figure 3, combining the main findings of Figures 1 and 2, contrasts the distributions of PPVT performance of Headstart and control groups when both were tested in kindergarten in September. The differences are striking.

Table III summarizes our PPVT findings in the form of mean and standard deviation raw scores for Headstart at each testing, for control, and for the standardization sample in the Peabody manual (2). The differences between the second and third Headstart means and the initial Headstart and control means are significant at well beyond the 0.0001 level. However, the Headstart group after the 6-week program is still inferior to the "normative" sample.

When the initial Headstart population was divided into quartiles and the mean change for each quartile computed, all four quartiles showed net gains, but progressively smaller in amount, varying from 13.55 to 10.05 to 5.16 to 0.85, respectively. Since children were lost to the sample, both by dropout (41) or by absence on the day of testing (46), each lost group was compared with a matched sample to make certain that selective loss did not account for the apparent gains; the lost groups did not differ from their matched controls on initial testing.

The results from the DAP are displayed in Table IV. Once again the difference between Headstart and control is highly significant in favor of Headstart by September ($p < 0.01$). However, in this instance, the controls are at the same level as Headstart in August (H-2). Inspection of the raw scores by month of age for the PPVT and the DAP for all untrained subjects (Headstart pre-test plus controls) demonstrates that there is a more regular and a larger change with age for the DAP than the PPVT. Apparently, the slum environment provides stimulus conditions more adequate

for the maturation of figure drawing than of hearing vocabulary. This is further evidenced by the fact that the degree of deficit registered in our slum population in comparison to standardization samples is greater for the PPVT than for the DAP. The two tests (initial values) correlated in our population at a significant but low value (0.39), but it should be noted that the limited range of ages and scores would necessarily attenuate any true correlation. At the least, the DAP findings further served to indicate that the control population was not initially inferior to the experimental one.

The importance of the specific environment on intellectual growth is further demonstrated by differences in IQ gain attributable to different patterns of teacher behavior. Preliminary analyses of teacher behavior patterns, for example, show that teachers rated as warm, varied in their activity, and flexible produced significantly greater average change in IQ than their opposites ($p < 0.05$ by analysis of variance). Moreover, there is a highly significant difference in amount of IQ gain between those classrooms in which teachers spend a high proportion of their time teaching as opposed to merely playing or enforcing obedience ($p < 0.001$ by analysis of variance). These results suggest not only that pre-school experience in general but a special form of competent pre-school teaching can lead to highly significant gains in deprived children.

Thus, we have demonstrated significant gains attributable to the Headstart experience by both the PPVT and the DAP. Differences of this magnitude cannot be explained away by test repetition (4,5) or, as we have shown, by initial asymmetry in comparison groups. Our findings are in accord with those reported by others (6,7) who have evaluated children enrolled in more extensive pre-school programs. They are affirmed by

simultaneous studies on sub-samples of Headstart and control populations by our colleagues Dr. Washington, Dr. Kofsky, and Dr. Rosenberg who found, by Binet, Columbia Mental Maturity Scale, and special perceptual tests, significant advantages in favor of Headstart.

What must be considered remarkable is that these gains were obtained by a six-week program conducted by elementary school teachers without extensive training and experience with pre-schoolers. How much more might we not anticipate from year long thoroughly planned and pedagogically more sophisticated programs of pre-school enrichment!

We are, however, far from convinced that these gains will endure, given the over-crowding, educational impoverishment, and generally negative attitudes toward the poor that characterize inner-city elementary schools. We would not, after all, anticipate that a good diet at age 5 would protect a child against malnutrition at age 6. The mind, like the brain, requires alimentionation, biochemical, physiological, and cognitive, at every stage of its development. The durable gains from Headstart will be measured less by our test findings, however significant, than by the demonstration that a national effort could be mounted, by the experience offered teachers in working with classes of 15 instead of 40, by the firsthand knowledge gained by volunteers, many of whom for the first time confronted the ugly face of poverty.

What has been shown by Headstart was known to Binet (8) whose test has been used with such little appreciation of what he wrote in 1909, "...some recent philosophers appear to have given their consent to the deplorable verdict that the intelligence of the individual is a fixed quantity...we must protest and act against this brutal pessimism ...a child's mind is like a field for which an expert farmer has advised

157/3

a change in the method of cultivation, with the result that in place of desert land, we now have a harvest. It is in this particular sense, the one which is significant, that we say that the intelligence of children may be increased. One increases that which constitutes the intelligence of the school child; namely, the capacity to learn, to improve with instruction..."

15714

Bibliography

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3. Harris, D.B.: Children's Drawings as Measures of Intellectual Maturity. N.Y., Harcourt, Brace & World, 1963.
4. Allerhand, M.E.: Effectiveness of Parents of Headstart Children as Administrators of Psychological Tests. Mimeographed, 1966.
5. Norris, R.C., Hottel, J.V. and Brooks, S.: Comparability of Peabody Picture Vocabulary Test Scores Under Group and Individual Administration. *J. Educ. Psychol.* 51: 87-91, 1960.
6. Gray, S.W. and Klaus, R.A.: An Experimental Pre-school Program for Culturally Deprived Children. *Child Developm.* 36: 887-898, 1965.
7. Dunn, L.M. and Mueller, M.W.: An Interim Report on the Efficacy of the Initial Teaching Alphabet and the Peabody Language Development Kit with Grade One Disadvantaged Children. Unpublished Manuscript, 1966.
8. Binet, A.: cited in Stoddard, G.D.: The I.Q.: Its Ups and Downs. *Educ. Rec* 20: 44-57, 1939.

15715

TABLE I
Years of Schooling

<u>Grades</u>	<u>Fathers</u>		<u>Mothers</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
6 or less	39	13	23	7
7 - 10	143	49	173	50
11 - 12	98	35	145	41
13 +	<u>10</u>	<u>3</u>	<u>9</u>	<u>2</u>
Subtotal	290	100	350	100
Unknown	<u>71</u>	20	<u>11</u>	3
Grand Total	361		361	

TABLE II
Yearly Income

	<u>Number</u>	<u>Percent of Total</u>	<u>Percent of Answered</u>
Under \$3000	160	44%	50%
\$3000 - \$5000	129	36%	41%
Over \$5000	29	8%	9%
No Answer	<u>43</u>	<u>12%</u>	
Total	361	100%	

15716

TABLE III
PPVT Raw Scores

	Control	H₁	Headstart		Stand. Sample
			H₂	H₃	
Mean	33.65	32.63	36.83	39.74	50.22
S.D.	11.70	12.33	10.82	11.34	8.17
(N)	(402)	(424)	(413)	(402)	(133)

TABLE IV
DAP Raw Scores

	Control	H₁	Headstart		Stand. Sample
			H₂	H₃	
Mean	8.91	7.71	9.10	9.75	15.2
S.D.	4.98	4.79	4.20	4.41	5.01
(N)	(420)	(500)	(476)	(435)	(300)

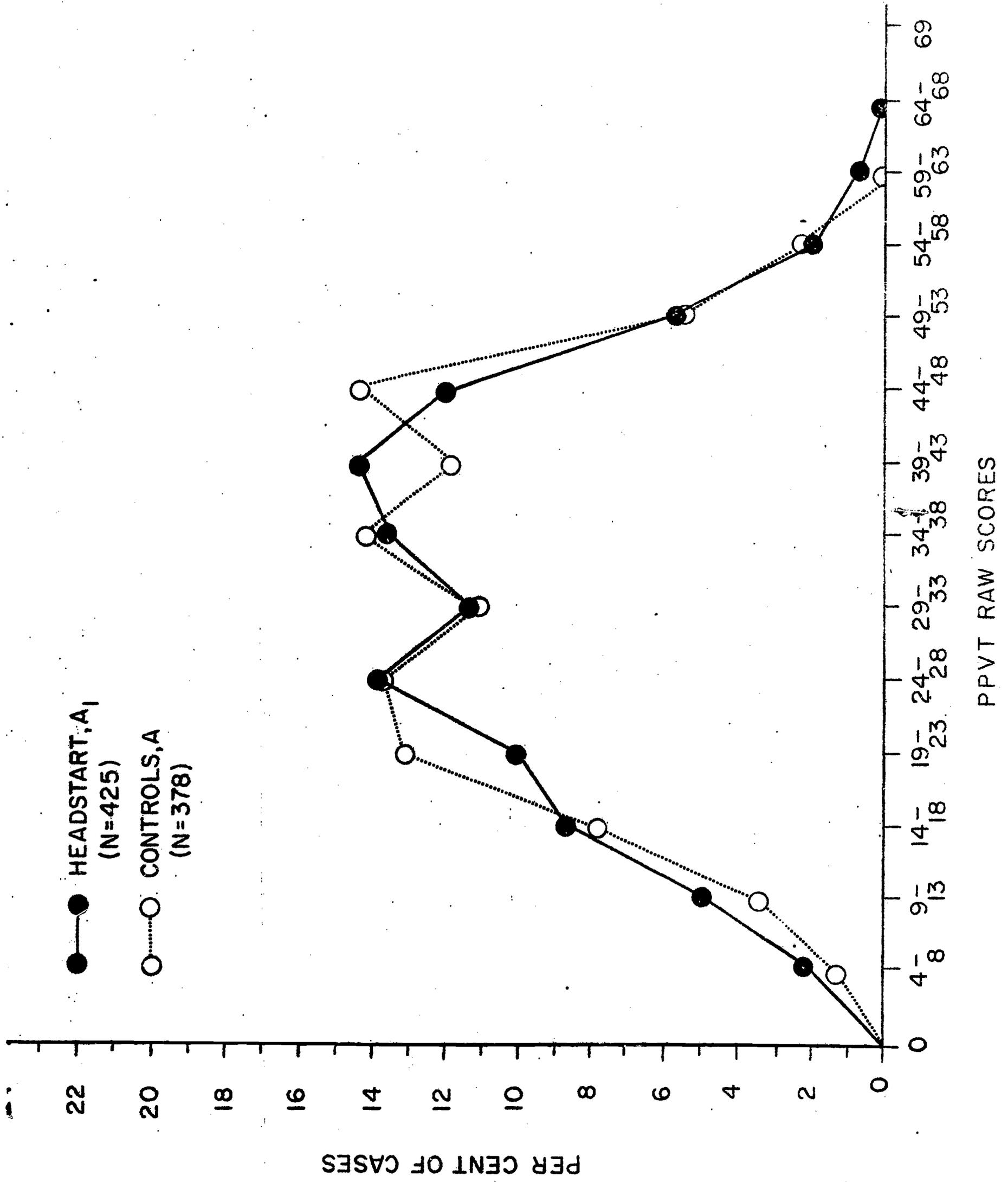


Fig. 1

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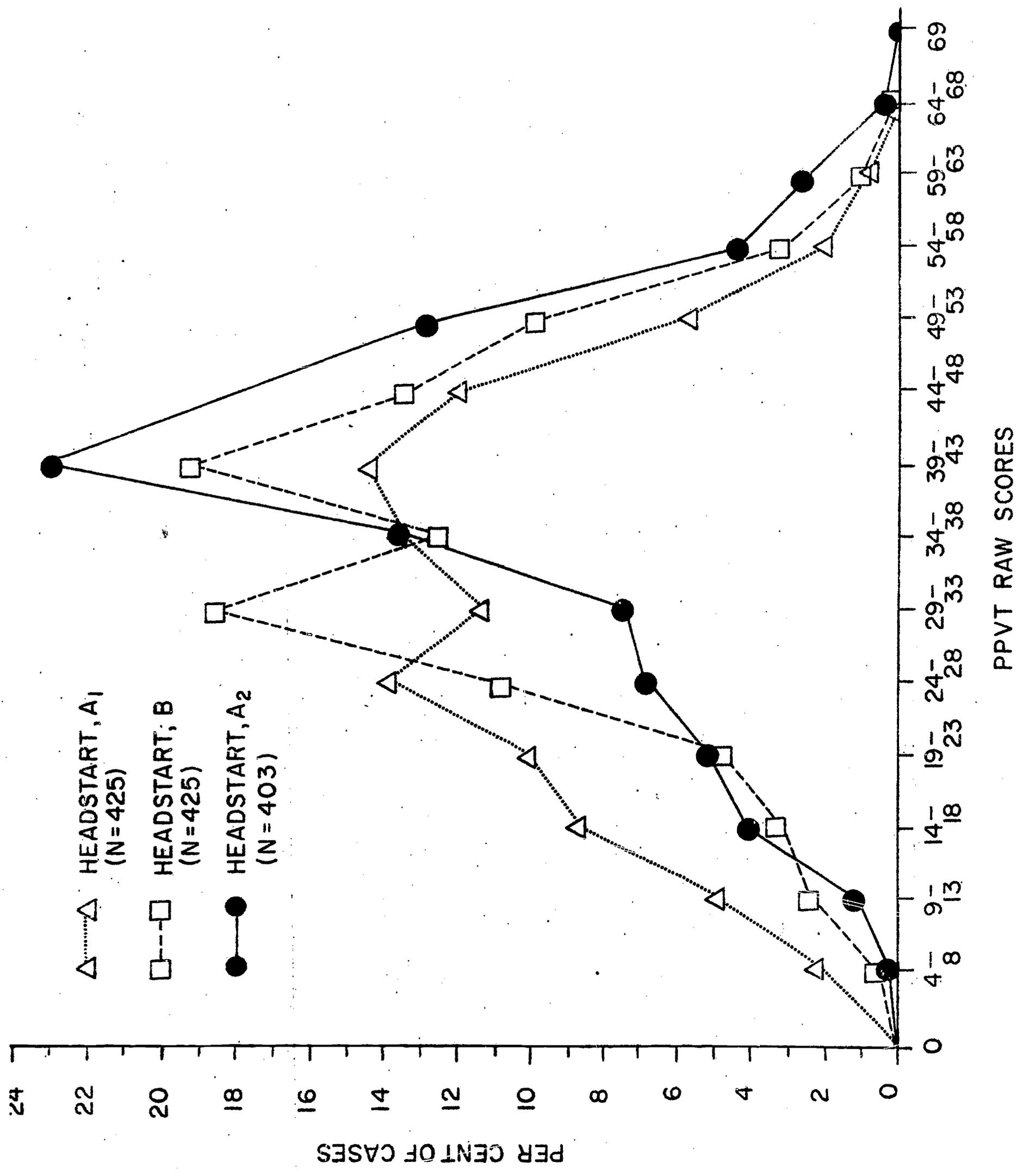


Fig. 2

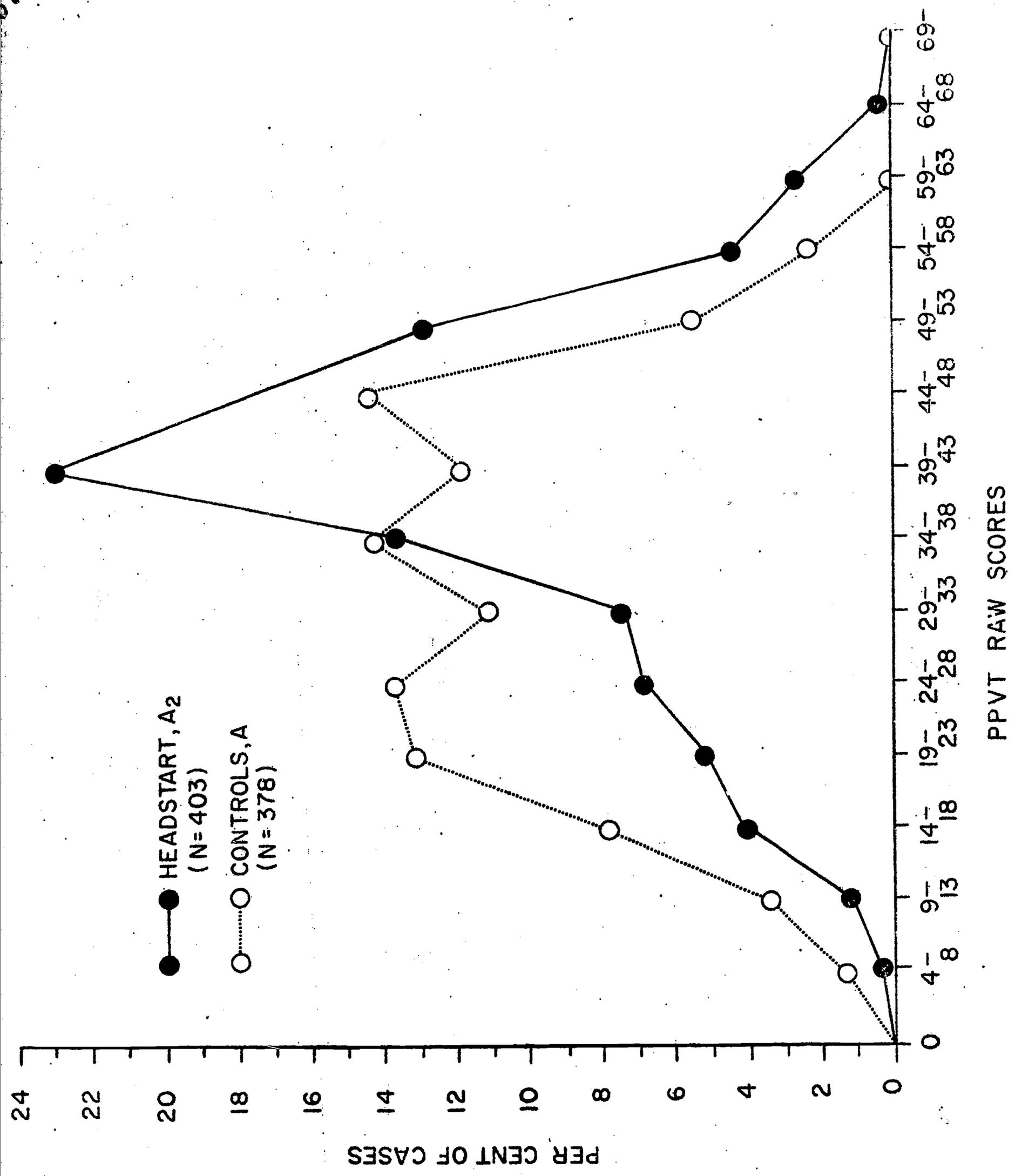


Fig. 3

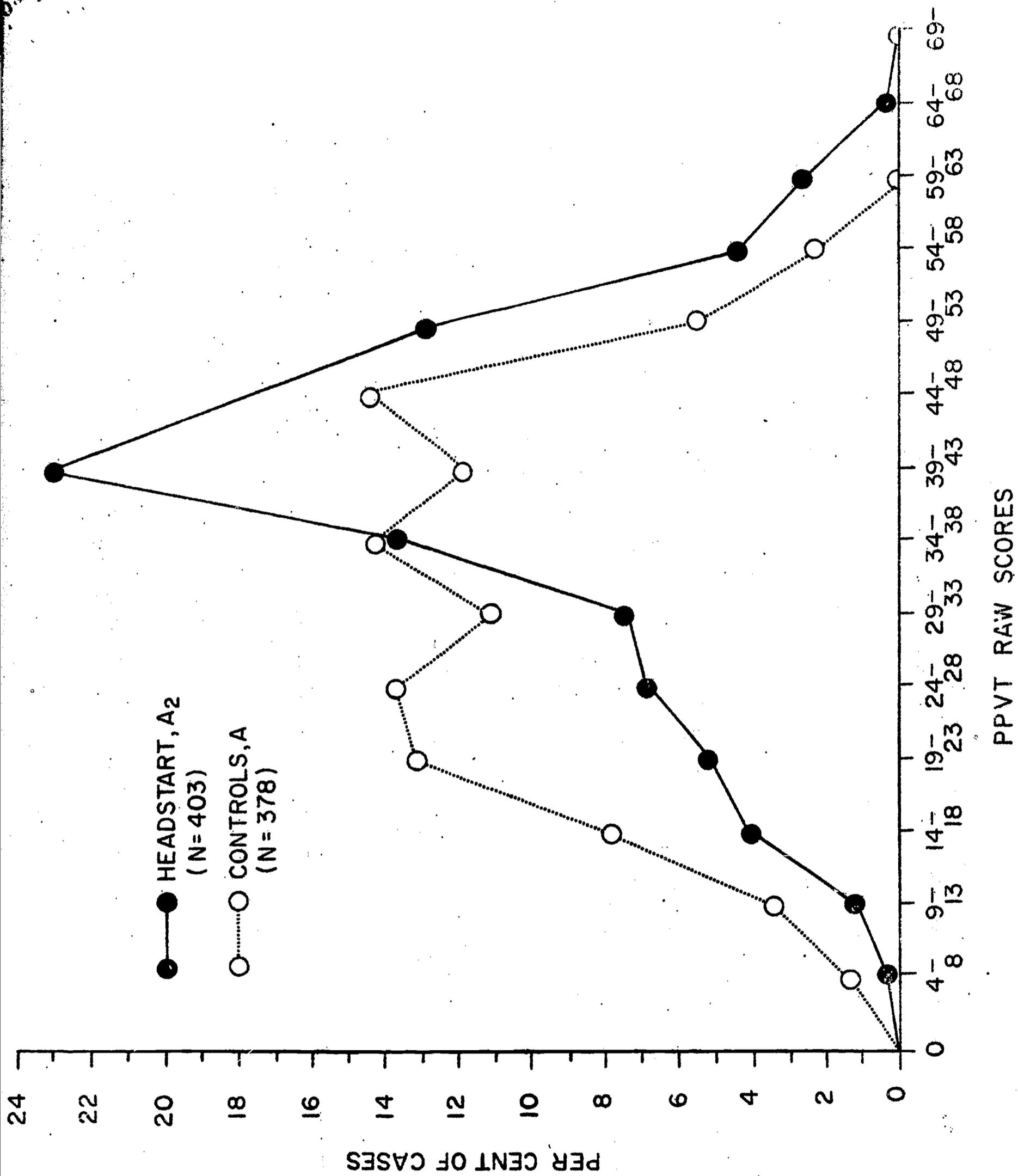


Fig. 3

Harris, Florence R.; Johnston, Margaret K.; Kelley, C. Susan & Wolf, M. M. "Effects of positive social reinforcement on regressed crawling of a nursery school child," Journal of Educational Psychology, 1964, 55.

Use of social reinforcement procedures to help a child substitute already established walking behavior for recently reacquired crawling behavior was studied in a nursery school situation. (Also available in Ullman and Krasner's Case Studies in Behavior Modification, pp. 313-319.)

Hart, Betty M.; Allen, K. Eileen; Buell, Joan S.; Harris, Florence K.; & Wolf, M. M. "Effects of social reinforcement on operant crying," Journal of Experimental Child Psychology, 1964, 1, 145-155.

Two preschool boys who showed a high frequency of operant crying were helped to develop more effective responses to mild frustrations. Teachers systematically applied reinforcement procedures. Within a week operant crying had practically disappeared in each case. (Also available in Ullman and Krasner's Case Studies in Behavior Modification, pp. 320-325.)

Hawkins, R. P. ; Peterson, R. F.; Scheweid, Edda; and Bijou, S. W. "Behavior therapy in the home: amelioration of problem parent-child relations with the parent in a therapeutic role," Journal of Experimental Child Psychology, 1966, 4, 99-107.

Describes the experimental modification of a problem mother-child relationship. The child, a four-year-old boy, was extremely difficult to manage and control. Treatment was carried out in the home with the mother as the therapist. The child's objectionable behaviors were observed to change in frequency and topography as a consequence of the treatment and appeared to generalize from the experimental hour to the remaining hours of the day. Nearly a month later these changes were still in evidence.

Headrick, Mary, W. "Operant conditioning in mental deficiency," American Journal of Mental Deficiency, 1963, 67, 924-929.

This paper gives a brief review of research of operant conditioning with mental retardates. It includes sections on the nature of operant techniques, and their applications to mental retardation. 14 ref.

Hewett, F. M. "Teaching speech to an autistic child through operant conditioning. American Journal of Orthopsychiatry, 1965, 35 927-936.

Successful improvement of one case.

Hewett, F. M. "Teaching reading to an autistic boy through operant conditioning. The Reading Teacher, 1964, 17, 613-618.

Case study described in above reference.

Hingtgen, J. N., Sanders, B. J. & DeMyer, M. K. "Shaping cooperative response in early childhood schizophrenics." In Ullman, L. M. & Krasner, L. Case Studies in Behavior Modification, New York: Holt, Rinehart and Winston, 1965.

Six early childhood schizophrenics, who had been observed to initiate little or no social interaction with their peers, were trained to operate a lever to obtain coins (which were later exchanged) on a fixed-ratio schedule of reinforcement. Using nonverbal operant conditioning techniques a cooperative response was shaped with subsequent pairs of subjects. The results indicated that it was possible to shape cooperative responses in early childhood schizophrenics within an average of 23 sessions. In addition, other forms of social interaction were observed to increase in frequency in the experimental room. There was little evidence of any continuation of social interaction when the subjects were returned to the ward.

Holland, Audrey L. "Some applications of behavioral principles to clinical speech problems," Journal of Speech and Hearing Disorders, 1967, 32, 11-17.

Findings of behavioral analysis which are relevant to the work of the speech clinician are discussed, and suggestions for the facilitation of therapy are presented. Operant conditioning must be understood if it is to be used by the speech clinician.

Hollis, J. H. "Effects of reinforcement shifts on bent-wire performance of severely retarded children. American Journal of Mental Deficiency, 1965, 69, 531-535.

The individual performances of severely retarded children on bent-wire problems are presented and the performance of 2 groups when subjected to qualitative reinforcement shifts are compared. The reinforcement in the experimental group to social

reinforcement (verbal approval and physical contact), and back to a nutritive reinforcer. In the control group the shift in reinforcement was from nutritive reinforcement to a situation of no reinforcement and back to a nutritive reinforcer. The findings are related to previous studies on solution of bent-wire problems which employed subhuman primates and retarded children as Ss.

Hollis, J. H. "The effects of social and nonsocial stimuli on the behavior of profoundly retarded children: part I." American Journal of Mental Deficiency, 1965, 69, 755-771.

This paper presents a method for observing and recording the effects of social and nonsocial stimuli on the behavior of profoundly retarded children. The results of this investigation (Part I, Experiment I) show that specific forms of physical and social stimuli have definite and differential effects on the behavior of profoundly retarded female children. When other-directed responses (grasping, physical contact, etc. with the environment) had a high frequency, the self-directed responses (clasping, stereotyped movements, etc.) occurred at a low frequency.

Hollis, J. H. "The effects of social and nonsocial stimuli on the behavior of profoundly retarded children: part II," American Journal of Mental Deficiency, 1965, 69, 772-789.

This paper presents Part II (Experiment II) of a two-experiment investigation on the responses of profoundly retarded children to social and non social stimuli. The results of this investigation (Part II, Experiment II) show that specific forms of physical and social stimuli have definite and differential effects on the behavior of profoundly retarded male children. When other-directed responses (grasping, physical contact, etc. with the environment) had a high frequency, the self-directed responses (clasping, stereotyped movements, etc.) occurred at a low frequency. The entire investigation (Part I and II) was discussed with respect to: development and behavior, emotion, play behavior and vocal behavior.

Holmes, Frances B. "An experimental investigation of a method of overcoming children's fears," Child Development 1936, 7, 6-30.

"This study was planned with the aim of trying out experimentally a method of overcoming fear in young children. The method was successful in overcoming the fears of 13 of the 14 children who were afraid of the dark room." This is one of the first studies of phobias using a learning model.

Homme, L. E., Debaca, P. C., Denine, J. V., Steinhorst, R. & Rechert, E. J. "Use of the Premack principle in controlling the behavior of nursery school children." Journal for the Experimental Analysis of Behavior, 1963, 6, 544.

Successful application of Premack's principle to management of classroom behavior.

Hundziak, Marcel; Maurer, Ruth A.; Watson, L. S., Jr. "Operant conditioning in toilet training of severely mentally retarded boys," American Journal of Mental Deficiency, 1965, 70, 120-124.

Twenty-nine severely retarded boys with IQ's ranging from 8 to 33 and CA's ranging from 7 to 14 and free of major physical handicaps were selected for a controlled study designed to test the efficiency of operant conditioning for toilet training. Results supported the hypotheses that (1) the operant conditioning techniques is superior to the conventional method in toilet training of severely mentally retarded children and (2) ability to use the commode acquired through operant conditioning transfers to the original living unit.

Jones, Mary Cover. "A laboratory study of fear: the case of Peter." Pedagogical Seminar, 1924, 31, 308-316.

A classical study in the creation and and elimination of a phobia through conditioning techniques. (Also available in Eysenck's Behavior Therapy and the Neuroses, pp. 45-51.)

Kerr, N. Meyerson, L. & Michael, J. "A procedure for shaping vocalizations in a mute child." In Ullman, L.P. & Krasner, L. Case Studies in Behavior modification. New York: Holt, Rinehart & Winston, Inc., 1965.

A case study was presented in which an effort was made to establish the conditions under which a mute, three-year old child--who had other serious physical handicaps and behavioral deficits of unknown origin and scope--could exhibit the precursor to imitative behavior; namely, to make a sound within a short interval after the experimenter had made a sound. The child learned to vocalize freely after two hours of intermittent exposure to the reinforcement contingency. A strong tendency to cease vocalizing in response to the experimenter's vocalizations was altered by a fading in procedure. Additional progress in this case and applicability of the procedures to other cases of muteness were predicted.

Kimbrell, D. L., Luckey, R. E., Barbuto, P. F. P. & Love, J. G. "Operation dry pants: an intensive habit-training program for severely and profoundly retarded." Mental Retardation, 1966, 2, 32-36.

Reveals that severely and profoundly retarded institutionalized girls make significant gains in social maturation during a relatively brief period of exposure to a combination of behavior-shaping techniques currently available. Ss, 5-18 yr. of age with a mean social age of approximately 17 mo., made statistically significant progress over and beyond their comparison groups in skills represented by items on the Vineland Social Maturity Scale and 9 categories of behavior included in a modified version of the scale. In addition, the 20 girls in training required only $\frac{1}{2}$ the amount of laundry used by their peers who received conventional institutional care and treatment.

Lazarus, A. A. "The elimination of children's phobias by deconditioning," Medical Proceedings, (South Africa) 1959, 5, 261-265.

An account of the application of Wolpe's psychotherapeutic methods based on the principle of reciprocal inhibition to a preliminary group of 18 phobic children. The results indicate that these methods are eminently effective after 6 months to 2 $\frac{1}{2}$ years have shown no evidence of relapse in any form. (Also available in Eysenck's Behavior Therapy and the Neuroses, pp. 114-122, and Eysenck's Experiments in Behavior Therapy. pp. 467-474.)

Lazarus, A. A. & Abramovitz, A. "The Use of 'emotive imagery' in the treatment of children's phobias," Journal of Mental Science, 1962, 108, 191-195.

Wolpe's reciprocal inhibition technique, involving systematic desensitization with emotion arousing situations presented to the child's imagination, was used with 7 successes out of 9 cases, and with mean number of treatments of 3.3. (Also available in Eysenck's Experiments in Behavior Therapy, pp. 458-462, and Ullman and Krasner's Case Studies in Behavior Modification, pp. 300-304.)

Lovaas, O. I. "A program for the establishment of speech in psychotic children." In J. K. Wing. Early childhood autism: clinical, educational and social aspects." London, England: Pergamon Press, 1966. pp. 115-144.

Same general content as next abstract.

Lovaas, O. I., Berberich, J. P., Perloff, B. F., & Schaeffer, B. "Acquisition of imitative speech in schizophrenic children, Science, 1966, 151, 705-707.

Report of work carried out at the Neuropsychiatric Institute, UCLA.

Lovaas, O. I., Freitag, G., Gold, V. J., & Kassorla, I. C. "Experimental Child Psychology, 1965, 2, 67-84.
Journal of Experimental Child Psychology
Analysis of self-destructive behavior and its control.

Lovaas, O. I., Freitag, G., Kinder, M., Rubenstein, B., Schaeffer, B. & Simmon, J. "Developing social behaviors in autistic children using electric shock."
Psychological Abstracts, 1966, 40, 309.

Three experimental investigations were carried out on 25-year old identical twins diagnosed as childhood schizophrenics by using painful electric shock in an attempt to modify their behaviors. Their autistic features were pronounced: they manifested no social responsiveness, speech, nor appropriate play with objects. They engaged in considerable self-stimulatory behavior, and in bizarre, repetitive bodily movements. They had not responded to traditional treatment efforts. The studies show that it was possible to modify their behaviors by the use of electric shock. They learned to approach adults to avoid shock. Shock was effective in eliminating pathological behaviors, such as self-stimulation and tantrums. Affectionate and other social behaviors toward adults increased after adults had been associated with shock reduction.

Lovibond, S. H. Conditioning and Enuresis, Oxford, England: Pergamon Press Ltd., 1964, pp. 219.

Reviews the literature on enuresis, the major theories of enuresis, and their implications for treatment. Reports of original research with a view to clarify problems related to conditioning treatment of enuresis, an extensive survey regarding family background, severity of toilet training, etc. to provide evidence relative to the various theories of enuresis, and field experiments is included which deals with the clinical application of conditioning treatment of enuresis.

Martin, B. and Kubly, Delores. "Results of treatment of enuresis by a conditioned response method,"
Journal of Consulting Psychology, 1955, 19, 71-73.

The results of treating enuresis by a conditioned response method are reported in this study. It was found from questionnaire responses by parents of 118 children that this procedure was relatively successful in 74% of the cases. Girls were found to have enuresis less frequently and to be cured more easily when they did have it.

Metz, J. R. Conditioning generalized imitation in autistic children. Journal of Experimental Child Psychology, 1965, 2, 389--399.

Generalized imitative behavior, commonly found in normal children but reduced or absent in autistic children, was studied in two autistic children. Operant conditioning methods were applied to teach the children generalized imitative behavior in a laboratory setting. The children learned to imitate on specifically trained tasks. More important, this learning generalized to similar but new tasks where specific training and specific rewards were not given.

Miron, N. B. "Behavior shaping and group nursing with severely retarded patients. In: California, State Mental Hygiene Department. Reinforcement Theory in Psychological Treatment--A symposium. Fischer, J. & Harris, R. E., eds. 1966, p. 1-14.

A treatment program based on behavior shaping and group nursing is described in terms of its effect on SMR patients. Staff involvement is considered a critical variable with the psychiatric technician assuming primary importance. Acceptance of the program is dependent upon the support of many people as well as their personal involvement in its organization. The patient ward consisted of 94 severely and profoundly retarded adolescent ambulatory girls. Most of these girls evidenced behavior problems, limited toilet training, and very little speech. Functional nursing in large groups was modified to allow the introduction of group nursing. This involved small groups on at least 2 nursing shifts, stable nursing staff, and a group mother. The pilot study consisted of 8 patients and a single technician working a shift for a 5-day week. Reinforcement consisted of candy, food, verbal responses, and physical contact. Aversive controls were discontinued when the results compared unfavorable with positive reinforcement. Data included observations of level of functioning as shown by the Cain-Levine Scale of Social Competency, indicated a consistent decrease of fatal accidents, a substantial increase in interpersonal contacts, and improvement of personal care.

Mowrer, O. H. "Enuresis-A method for its study and treatment," American Journal of Orthopsychiatry, 1938.

A classical study of the treatment of enuresis with conditioning techniques. (Also available in O. H. Mowrer's Learning Theory and Personality Dynamics, pp. 390-417) New: Ronald Press, 1953.

O'Leary, K. D. & Becker, W. C. "Behavior modification of an adjustment class: a token reinforcement program." Exceptional Children, 1967, 33, 637-642.

A base rate of deviant behavior was obtained for the 8 most disruptive children in the 3rd grade adjustment class. In a token reinforcement program, the children received teacher's ratings which were exchangeable for reinforcers such as candy and trinkets. With the introduction of the token reinforcement program, an abrupt reduction in deviant behavior occurred. Delay of reinforcement was gradually increased to 4 days without increase in deviant behavior. The program was equally successful for all children observed, and anecdotal evidence suggests that the children's appropriate behavior generalized to other school situations.

Orlando, R. "Shaping multiple schedule performances in retardates: establishment of baselines by systematic and special procedures." Journal of Experimental Child Psychology, 1965, 2, 135-153.

Analysis of cases in which a systematic procedure for establishment of multiple schedule baseline performances failed to shape the desired terminal behavior suggested that some parts of the procedure were inadequate. Modifications were made to correct for specific defects noted in demonstration, rate evaluation, rate strengthening, and establishment of stimulus control phases. Data were shown for 2 typical Ss who successfully completed the modified procedure and exhibited satisfactory baseline performance of mult VR 25 ext. Differences among successful Ss are limited primarily to necessity for repeating some conditions due to initial failure to meet criteria. The modified systematic procedure was not successful with all institutionalized retardates. Failures appeared to be due to inadequacy of candy as a reinforcer. Sixteen Ss selected to represent a range of chronological age and duration of institutionalization were first given the systematic shaping procedure. Those not exhibiting satisfactory baseline performances then were given a demonstration procedure that was designed to take advantage of the apparently strong influence of social contact with E on the behavior

of these Ss. Five Ss required special procedures, such as schedule changes to increase rate, or negative reinforcers for establishment of S control, or both. Satisfactory baseline performances were obtained in criterion sessions for all 16 Ss. The results suggest that complex performances may effectively be established with systematic shaping procedures, but reinforcer effectiveness differences in some mentally retarded Ss require use of special procedures or conditions.

Orlando, R. & Bijou, S. W. "Single and multiple schedules of reinforcement in developmentally retarded children. Journal of Experimental Analysis of Behavior, 1960, 3, 339-348.

The behavior of developmentally retarded children as a function of four basic schedules of reinforcement and several multiple-schedule variations is illustrated. Effects are similar to those found with nonretarded and infrahuman subjects.

Patterson, G. R. "A learning therapy approach to the treatment of the school phobic child. In Ullman, L. P. and Krasner's Case Studies in Behavior Modification. New York: Holt, Rinehart & Winston, Inc., 1965. A procedure was described for applying the principles of interference and reinforcement to the treatment of a school phobic child. A series of twenty-three 20 minute conditioning sessions with the child followed by highly structured ten-minute interviews with the parents resulted in dramatic changes in behavior.

Patterson, G. R. "An application of conditioning techniques to the control of a hyperactive child." In Ullman, L. P. & Krasner's Case Studies in Behavior Modification. New York: 1965.

A 9-year old boy who was described as hyperactive in school was conditioned to eliminate this behavior through the use of candy-dispensing apparatus in the classroom which rewarded quiet behavior. The days total reward was divided among all the children in the class, thereby also providing social reinforcement from peers. The results showed a significant decrease in hyperactive responses per minute and show that it is possible to manipulate "high rate" behaviors occurring in the classroom setting. Problems involved in this and other operant conditioning procedures are discussed.

Patterson, G. R. & Hinsey, W. C., "Investigation of some assumptions and characteristics of a procedure for instrumental conditioning in children. Journal of Experimental Child Psychology, 1964, 1, 111-112.

This report outlines a series of studies investigating two general problems relating to instrumental conditioning procedures for children. The first series of studies analyze the assumptions made with regard to the reliability of measures of response strength, the effect of sampling various aspects of conditioning data in deriving measures of response strength, and the persistence of conditioning effects over time. The second set of data analyze the effect of reinforcing stimuli in changing serially dependent responses. The data show that in this procedure children adapt nonrandom patterns of responding. The particular pattern adopted by the child is a significant determinant of the magnitude of behavior change produced by reinforcing stimuli.

Peterson, D. R. & London, P. "Neobehavioristic psychotherapy: quasihypnotic suggestion and multiple reinforcement in the treatment of a case of post-infantile dyscopresis," Psychological Record, 1964, 14, 469-474.

In both theory and practices, most forms of behavior therapy exclude insight as a treatment goal and even as a means to the attainment of other treatment goals. In modern behavior theory, however, the phenomena of cognition and insight are admissable and important topics for scientific inquiry. Recent studies show that learning can be dramatically facilitated by awareness.. Ignoring the human capacity for insight in a psychotherapeutic system may be foolishly inefficient. These principles are clarified in an illustrative case. (Also available in Ullman and Krasner's Case Studies in Behavior Modification, pp. 289-295.)

Parsley, N. B. and Hamilton, J. W. "The Development of a Comprehensive Cottage-Life Program," Mental Retardation, 1965, 3, 25-29.

In August of 1964 and experimental cottage project was started at Gracewood (Georgia) State School and Hospital, the state residential facility for the retarded. This paper is a report of its development and progress at the end of four months. The purpose of the project is to determine and demonstrate effective methods of improving resident care on the cottage level.

Pihl, R. O. "Conditioning procedures with hyperactive children." Neurology, 1967, 17, 421-423.

The hyperactive, or hyperkinetic, syndrome has been discussed recently by a number of investigators.

Studies with lower organism have shown that, by making the presentation of food contingent on an animal's remaining motionless and shock contingent on the animal's movements, the extent of that animals' activity can be controlled. The 2 cases presented... are examples of these procedures with hyperactive children... Conditioning techniques used in controlling hyperactivity provide a valuable methodology that does not rely on drugs or surgical procedures. Then when control over activity per se has been achieved., other problems can be met with more traditional methods. Further, this technique can be utilized to achieve a base line of activity upon which drug and surgical procedures can be evaluated. General statements from the 2 reported cases must be tempered because of the unknown effects of numerous variables, such as extent and localization of neurological damage, age variables, and possible differences in etiology."

Premack, D. "Reinforcement theory." In D. Levine (Ed.) Nebraska Symposium on motivation: 1965, 123-180.

General theoretical article.

Rabb, Ehtel & Hewett, F. M. "Developing appropriate classroom behaviors in a severely disturbed group of institutionalized kindergarten-primary children utilizing a behavior modification," American Journal of Orthopsychiatry, 1967, 37, 313-314.

Describes a program to engage hospitalized children diagnosed as autistic, a typical, severe primary behavior disorders in a group learning situation.

Rachman, S. "Systematic desensitization," Psychological Bulletin, 1967, 67, 93-103.

Describes the nature and background of the most prominent technique of behavior therapy, systematic desensitization. The relevant experimental investigations are discussed and assessed, and general conclusions regarding the present status of the method are drawn. It is suggested that future investigations might concentrate on (1) the efficacy of desensitization in treating disorders other than specific fears, and (2) replicating the established findings with psychiatric patients.

Rheingold, H. L.; Gewirtz, J. L. & Rose, H. W. "Social conditioning of vocalization in the infant," Journal of Comparative and Physiological Psychology, 1959, 52, 68-73.

Infants often vocalize as part of the response they give to the appearance of an adult. The central question of this study is: Can the frequency of vocalizing be increased if the adult makes a social response contingent upon it. The results suggest that the social vocalizing of the infants and, more generally, their social responsiveness may be modified by the responses adults makes to them.

Rheingold, H. L., Stanley, W. C. & Doyle, G. A., "Visual and auditory reinforcement of a manipulatory response in the young child." Journal of Experimental Child Psychology, 1964, 1, 316-326.

Children, aged 2-5 years, were given an opportunity to touch a ball and to discover that a touch could result in a short sequence of motion pictures accompanied by music. The reinforcing effects of the visual and auditory stimuli were assessed primarily by the extent to which fixed ratio (FR) schedules of reinforcement controlled rate of response. In one group of 20 Ss assigned to FRs, 15 Ss showed increasing rates of response with advancing ratios. In a second group of 5 Ss maintained a continuous reinforcement (CRF), none showed a progressive increase in rate of response during the session. The data indicate that the stimuli functioned as reinforcers. The findings suggest that manipulatory behaviors, through which the child learns some of the dimensions of his environment, can be maintained by the stimulation resulting from the manipulations..

Rice, H. K. & McDaniel, Martha W. "Operant behavior in vegetative patients," Psychological Record, 1966, 16, 279-281.

Reports operant conditioning studies with profoundly retarded (vegetative) children, and emphasizes the unique problems in studying this population and the methods used to study operant learning in these patients.

Risley, T. R. "The establishment of verbal behavior in deviant children." Dissertation Abstracts, 1966, 27, 989-990.

On the assumption that the development or lack of development of normal speech is related to conditions in the home environment, one aspect of the home environment, was modified, namely the skill and probability of the parent's reinforcing approximations to appropriate verbal behavior. The children's parents were trained to employ reinforcement contingencies in formal sessions in the home, and became able to maintain

and expand their child's verbal repertoire. During the course of this study experimental manipulations were made to isolate the effects of the reinforcement variables involved in the procedures. This program was effective in systematically establishing limited repertoires of normal verbal behavior in all Ss. The results of this study indicate that normal verbal behavior can be produced from rudimentary imitative verbal behavior through the application of established principles of behavior and by implication, that these principles are involved in the normal development of verbal behavior.

Roos, P. "Development of an intensive habit-training unit at Austin State School," Mental Retardation, 1965, 3, 12-15.

A specialized training unit for development of self--help skills in severely retarded children is described. Details of the training procedures are outlined.

Rosenhan, D. "Aloneness and togetherness as drive conditions in children. Journal of Experimental Res. in Personality, 1967, 2, 32-40.

In order to examine the effects of aloneness (social deprivation) and togetherness (social satiation) on the subsequent responsiveness of children to reinforcers, younger and older Ss were socially deprived or satiated and then exposed to either positive or negative, social or nonsocial reinforcement. The findings indicate that socially deprived children are indifferent to the valence of the subsequent reinforcement, so long as it is social. Socially satiated children are subsequently most responsive to non social reinforcement (or pure information). Additional findings indicate that younger children respond more to negative reinforcement, while older children show a strong preference for positive reinforcement. The results are examined for their implications for theories of social drives, and for the limitations they set on the development of problem-solving behavior.

Ross, A. O. "Learning theory and therapy with children," Psychotherapy: theory, research and practice, 1964, 1, 102-107.

Compares therapeutic approaches to learning theory and therapy of both behavior therapists and psychotherapists. Suggests that use of principles of learning be used in conjunction with behavior therapy.

Schwitzgebel, R. & Kulb, D. A. "Inducing behavior change in adolescent delinquents. Behavior Research and Therapy, 1964, 1, 297-304.

Using monetary rewards.

Sidman, M. & Stoddard, L. T. "The effectiveness of fading in programming a simultaneous form discrimination for retarded children. Journal of the Experimental Analysis of Behavior, 1967, 10, 3-15.

A nonverbal teaching program, combined with reinforcement and extinction (Program Group), was compared with reinforcement and extinction alone (Test Group), in teaching retarded children to discriminate circles from ellipses. In the Program Group, fading techniques were used to transfer stimulus control from "bright vs dark" to "form vs. no-form" and then to "circle vs ellipse". The Test Group had the task of learning the circle-ellipse discrimination with no prior teaching program. With the program, 7 of 10 Ss learned the circle-ellipse discrimination. Without the program, 1 of 9 learned. The 8 Test-Group Ss who failed to learn circle vs. ellipse were then given the opportunity to learn the form-no-form discrimination by reinforcement and extinction alone, without fading. 6 of the 8 learned, but only 3 of these 6 then learned circle vs. ellipse on a 2nd test. All 7 program-Group Ss who had learned form vs. no-form also learned the circle-ellipse discrimination by means of fading; each of the 7 made fewer errors than any of the 3 who succeeded on a 2nd test. Ss who failed to learn circle vs. ellipse adopted response patterns incompatible with the development of appropriate stimulus control.

Spradlin, J. E. "Effects of reinforcement schedules on extinction in severely mentally retarded children," American Journal of Mental Deficiency, 1962, 66, 634-640.

"The effects of reinforcement schedules on the extinction and spontaneous recovery of an operant response in severely mentally retarded children (1s) examined."

Spradlin, J. E., Girardeau, F. L. & Corte, En. "Fixed ratio and fixed interval behavior of severely and profoundly retarded subjects. Journal of Experimental Child Psychology, 1965, 2, 340-353.

Profoundly and severely retarded Ss were studied with operant conditioning procedures. Through shaping techniques, an operant knob-pulling response was

established by 15 profoundly and severely retarded Ss. Ss showed rather typical fixed ratio behavior with high rates of responding and with pauses after reinforcement. Mild deprivation increased the number of responses per session for 2 Ss. For a 3rd S a change in reinforcer increased the number of responses. Fixed interval schedules yielded low rates of responding with some evidence of temporal discrimination.

Staats, A. W. "Treatment of non-reading in a culturally deprived juvenile delinquent: an application of reinforcement principles. Child Development, 1965, 36, 926-942.

A 14-year old, Mexican-American delinquent was given 40 hours of reading with token reinforcement. His reading achievement improved and his delinquent behavior decreased to zero.

Staats, A. W., Finley, J. R., Minke, K. A., & Wolf, M. Reinforcement variables in the control of unit reading responses. Journal of Experimental Analysis of Behavior, 1964, 7, 139-149.

Staats, A. W., Minke, K. A., Finley, J. R., Wolf, M. & Brooks, L. O. "A reinforcer system and experimental procedure for the laboratory study of reading acquisition," Child Development, 1964, 35, 209-231.

Three 4-year old children were introduced to a laboratory procedure for the controlled presentation of a reading acquisition task. Reading responses were automatically recorded on standard operant conditioning equipment. A reinforcement system was employed using tokens backed up by a variety of subject-selected reinforcers. Results indicated that (a) the reinforcer system appeared to solve the major problem involved in maintaining children's behavior over long periods so that complex behavior may be studied, (b) the reading materials and their presentation yielded sufficient experimental control to allow for the further study of independent variables important to reading acquisition, and (c) the responses constituted a sensitive measure of the behavior under study.

Watson, J. B. See page 31

Watson, L. S. "Application of behavior-shaping devices to training severely and profoundly mentally retarded children in an institutional setting. Paper read at the annual meeting of the Midwestern Psychological Association, May, 1966.

The advantages of behavior-shaping devices over an

attendant "behavioral engineer" for training severely and profoundly MR children (IQs of 35 or less) are effectiveness, efficiency, and economy. Behavior-shaping devices are particularly useful for detecting and promptly reinforcing a desired response. Detailed description of such devices included an automated toilet trainer and an automated perceptualmotor development apparatus, designed to develop eye-hand coordination, finger-hand dexterity, and gross locomotor coordination. Development of a technology of automation to "teach" social and self-help skills to severely and profoundly MR children is proposed.

Watson, L. S. & Lawson, R. "Instrumental learning in mental retardates. Mental Retardation Abstracts, 1966, 3, 1-20.

Laboratory instrumental learning research with MRs was reviewed. Studies of discrimination, reinforcement, stimulus generalization, transfer of training and transposition were considered. Discrimination studies reported were concerned with operant conditioning and simple discrimination and learning sets with the Wisconsin General Test Apparatus. In general a relationship was found between MA and discrimination performance, particularly for complex discrimination tasks. Few studies have been concerned with primary and secondary reinforcement. Secondary reinforcement appears to be an effective reinforcement. Performance by retardates in stimulus generalization, transfer of training, and transposition studies was similar to that of normals. The most consistent finding was that most basic learning processes function essentially the same in MRs as in normals. The research on laboratory-controlled learning and performance was weakened by the scarcity of long range research programs in which standardized procedures are developed as basic analytic techniques. The areas of study in which the most disagreement existed were areas in which the greatest diversity of research methods are still characteristic.

Watson, L. S., Lawson, R., Sanders, C.C. "Generalized or token reinforcement with severely and profoundly retarded children. Paper read at the 89th annual meeting of the American Association on Mental Deficiency, Miami, Fla., July 1965.

A generalized reinforcement technique was investigated with 16 severely and profoundly mentally retarded children. They had a mean CA of 10-10 years and a mean IQ of 24.35. Ss were divided equally into experimental

and control groups and were given 4 sessions of pre--training evaluation in a free operant situation. Following this pretest the experimental group received 20 sessions of token reinforcement training. This consisted of each experimental S being given 30 poker chips (tokens) each session and being trained to insert these chips into 2 vending machines, one dispensing different kinds of candy ("edible" dispenser) and the other dispensing or displaying a movie, moving toys, or music ("manipulatable dispenser.") The group, included to control for "Hawthorne effect," was given a comparable amount of attention and candy, but received no token reinforcement training. At the end of training, both groups were given 4 sessions of free operant evaluation. A comparison of pre-and posttraining lever pulling rates for poker chip reinforcement indicated that the chips had acquired conditioned reinforcement properties as a result of training.

Watson, L. S., Lawson, R., & Sanders, C. C. "Primary reinforcement preferences of severely and profoundly retarded children in a generalized reinforcement context. Paper read at the annual meeting of the American Psychological Association, Chicago, 111, 1965.

Primary reinforcement preferences of 14, male institutionalized severely and profoundly retarded children were investigated. They had a mean CA of 11-0 years, and a mean SQ of 23.1 Ss pulled a plunger on different schedules of reinforcement for poker chips and used them to operate candy dispensing and amusement-type vending machines. One machine contained 5 kinds of candy, (edible dispenser), and the other contained a movie projector and a screen, a tape recorder which played music, and 5 cubicles in which electrically operated mechanical toys were placed (manipulatable dispenser). A chip dropped into one of the edible dispenser slots produced candy, the kind varying with the slot selected. A chip dropped into a manipulatable dispenser slot resulted in a toy operating for 10 seconds. The same thing happened with the movie or music. An Analysis of the frequency of chips spent by 14 Ss over 13 sessions showed that initially more chips were spent for manipulatable reinforcement than for candy, but by session 5 a reversal occurred and a slight candy preference gradually emerged. This difference in preference (candy over manipulatable) was not significant although a significant interaction was obtained (.001 level). An analysis of mean production of chips spent by 7 Ss over 70 sessions showed a rather stable candy preference

soon emerged and was maintained for the last 45 sessions of the experiment. This difference ($F=5.23$) approached the .05 level of significance (5.99). An analysis of candy preference showed that malted milk balls and M&Ms were most preferred (.01 and .05 levels respectively) and an analysis of manipulatable preference showed that music was most preferred (.05 level) although this difference may have been the result of a positional effect.

Watson, L. S., & Sanders, C. C. "Stimulus control with severely and profoundly retarded children under varying stimulus conditions in a free operant situation. Paper read at the 90th annual meeting of the American Association of Mental Deficiency, Chicago, Ill., May, 1966.

The influence of Stimulus change in a free-operant situation on the discrimination performance of 10 institutionalized severely and profoundly retarded children was investigated. Ss had a mean CA of 10-1 years with a range from 8-4 years to 14-9 years and a mean social quotient of 22.6 with a range from 16 to 36. They were trained to respond to multiple component stimuli on a multiple VI-extinction schedule of reinforcement. The discriminative stimulus was a cup of candy or a black disc and 6 illuminated clear lamps while nonreinforced stimulus was 2 illuminated blue lamps and a tone. After differential responding developed stimulus components were changed or "faded" until only the black disc was left as a stimulus. Changes in the controlling stimuli resulted in a deterioration of stimulus control or an increase in nonreinforced stimulus responding followed by a gradual recovery of stimulus control. In addition, the maximum stimulus disruption effect was frequently delayed not occurring sometimes until several sessions after the stimulus change was introduced. The findings of this study have application to the problem of transfer of training decrement in severely and profoundly MRs.

Watson, J. B. & Rayner, Rosalie. "Conditioned emotional reactions," Journal of Experimental Psychology, 1920, 3, 1-14.

The classical study of "Peter" in which a phobia against rabbits was created then eliminated using conditioning techniques. (Also available in Eysenck's Behavior Therapy and the Neuroses, pp. 28-37.

Watson, L. S., Jr. "Application of operant conditioning techniques to institutionalized severely and profoundly retarded children," Mental Retardation Abstracts, 1967, 4, 1-18.

The purpose of this paper is to discuss current application of operant conditioning to the control of behavior of institutionalized severely and profoundly retarded children, to speculate about future application of operant conditioning techniques to this population and to suggest a course of action which presumably will facilitate the development of a more effective technology of behavioral engineering for the severely and profoundly retarded.

Watson, Luke, S., Jr. & Lawson, _Reed. "Instrumental learning in mental retardates," Mental Retardation Abstracts, 1966, 3, 1-20.

Instrumental learning research is providing the basis for a new, effective technology of educating and training mental retardates with both academic and social implications. Perhaps the most consistent findings with respect to retardation are that most basic learning processes function essentially the same in MRs as in normals. What is clear is that researchers have only begun to discover truly effective, long-lasting reinforcers. (Includes 5 page bibliography.)

Weiner, I. B. "Behavior therapy in obsessive-compulsive neurosis: treatment of an adolescent boy," Psychotherapy: Theory, Research and Practice, 1967, 4, 27-29.

A 15-year-old boy with pervasive compulsive rituals was benefitted by the replacement of these with delimited ones that would interfere only minimally with normal activity.

Weir, M. W. "Children's behavior in a two-choice task as a function of patterned reinforcement following a forced-choice trials," Journal of Experimental Child Psychology, 1965, 2, 85-91.

After 40 forced-choice trials to acquaint Ss with the reinforcement schedules, 120 children between the ages of 3.7 and 5.4 were presented with a two-choice partial reinforcement situation to test the hypothesis that they would prefer predictable to unpredictable schedules. Choices of one of the alternatives were reinforced on either a 50% alternating or a 50% random schedule, while choices of the other alternative were reinforced on either a 50, 60, 70% random reinforcement schedule. A significant preference for the predictable schedule was found, but only in groups for which both alternatives paid off with an equal percentage

of reinforcement. The effects of a predictable schedule were apparently weak enough to be overcome by a discrepancy in percentage of reinforcement of 10%. The relevance of this finding for theories of cognitive development stressing the importance of predictability, or congruity, are discussed.

Werry, J. S. "The conditioning treatment of enuresis," American Journal of Psychiatry, 1966, 123, 226-229.

Twenty studies of the conditioning treatment of enuresis are discussed and evaluated. The method seems to be "Significantly superior to no treatment at all." Whether or not it follows the operant or classical conditioning paradigm is irrelevant. What is important in recommending it as a method of treatment is its safety, effectiveness and practicability.

Wetzel, R. "Use of behavioral techniques in a case of compulsive stealing," Journal of Consulting Psychology, 1966, 30, 367-374.

Demonstrates the use of behavioral principles in the modification of a deviant behavior. The "compulsive stealing of a 10-year-old resident of a home for mildly disturbed children was successfully eliminated over a 3½ month period." The use of non-professional individuals in the observation, recording, and modification of behavior is demonstrated. Implications are discussed for the role of the professional consultant as instructor in the application of behavior principles.

Whelan, R. J. & Haring, N. G. "Modifications and maintenance of behavior through systematic application of consequences," Exceptional Children, 1966, 32, 281-289.

Discusses behavior principles and techniques of behavior modification which may have implications for use in classes of exceptional children. Dangers inherent in random haphazard application of these principles are cited.

White, J. G. "The use of learning theory in the psychological treatment of children," Journal of Clinical Psychology, 1959, 15, 227-229.

In spite of the fact that for more than thirty years psychologists have been interested in applying principles of behavior discovered in general psychology, especially those of learning, to the understanding of behavior disorders and neuroses in children, these principles have been largely neglected in treatment. In order to demonstrate that this failure of transfer

need not necessarily be perpetuated, the history and treatment were described of a five and one-half year old girl who for three months had resisted all attempts by her relatives, by the family doctor, and by hospital nurses to get her to take solid foods. (Also available in Frank's Conditioning Techniques, pp. 196-201, and in Eysenck's Experiments in Behavior Therapy, pp. 463-466.)

Whitney, Linda Rae & Bernard, Kathryn E. "Implications of operant learning theory for nursing care of the retarded child," Mental Retardation, 1966, 4, 26-29.

The objective of this paper is to present a nursing approach to the teaching of independent living skill, built on the principles of operant theory. The case study presented in this paper represents the work of Whitney in which when applied the principles of operant learning to habilitate and recondition the feeding behavior a retarded child.

Williams, C. D. "The elimination of tantrum behavior by extinction procedures," Journal of Abnormal and Social Psychology, 1959, 59, 269.

"This paper reports the successful treatment of tyrant-like tantrum behavior in a male child by the removal of reinforcement. The treatment in this case did not involve aversive punishment. All that was done was to remove the reinforcement. Extinction of the tyrant-like tantrum behavior than occurred. No unfortunate side or after effects of this treatment were observed." (Also available in Ullman and Krasner's Case Studies in Behavior Modification, pp. 295-296.)

Wolf, M., Risley, T. & Mees, J. "Application of operant conditioning procedures to the behavior problems of an autistic child," Behavior Research and Therapy 1964, 1, 305-312.

An account is given of the treatment of a pre-school child who had serious behavioral and physical handicaps. In a sense this is a study involving both psychotherapy and rehabilitation. The treatment consisted of applying laboratory-developed techniques through the attendants and the parents over a 7-month period. (Also available in Ullman and Krasner's Case Studies in Behavior Modification, pp. 138-145.)

Zimmerman, Elaine H. & Zimmerman J. "The alternative of behavior in a special classroom situation," Journal of the Experimental Analysis of Behavior, 1962, 5, 59-60.

"Unproductive classroom behavior was eliminated in two emotionally disturbed boys by removing social consequences of the behavior. Behavior which was more adequate and efficient with respect to social and scholastic adjustment was shaped and maintained with social reinforcers." (Also available in Ullman and Krasner's Case Studies in Behavior Modification, pp. 328-330.)

ADDENDUM

Bijou, S. W., and Baer, D. M. Child development: readings in experimental analysis. New York: Appleton-Century-Crofts, 1967.

Collection of the 25 outstanding contributions of reinforcement to children. I. Basic principles and concepts: A. Basic mechanisms: operant and respondent; B. extensions to social dimensions; C. Discrimination diagnosis in development; D. Hereditary mechanisms, psychological behavior, and development; E. retrospect and prospect; II. Applications: A. To Social Behavior; B. To Deviant Behavior; C. To Education. III. Review and Overview

Costello, C. G. (U. Calgary, Alberta Canada) "Behavior modification procedures with children." Canadian Psychologist, 1967, 8(2), 73-75.

Discuss various aspects of learning theory in children. A case study of a 14 year old boy with hospital phobia is outlined and several other studies cited. It is concluded that much research and discussion are needed in order to develop rules of behavior modification in children.

O'Leary, K. Daniel; O'Leary, Susan, & Becker, Wesley C. (U. Illinois) "Modification of a deviant sibling interaction pattern in the home." Behaviour Research and Therapy, 1967, 5(2), 113-120.

The experimental modification of a sibling interaction is described. A 6 year old boy and his 3 year old brother frequently engaged in assaultive and destructive behavior. Treatment was carried out in the home using the E and later the mother as the therapist. The children's undesirable behavior changed markedly as a result of a token reinforcement system and a time-out from reinforcement procedure. According to parental and teacher reports, the behavior reinforced during the experimental hour did generalize to other times and situations.

Richard, Henry C., and Dinoff, Michael. (U. Alabama) "Behavior change in a therapeutic summer camp: A follow-up study." Journal of Genetic Psychology, 1967, 110(2), 181-183.

Eleven boys, exhibiting academic and interpersonal problems, attended an 8-week camping program for emotionally troubled children. Attempts to control and shape behavior took these major forms: (1) stage setting for the emergence of adaptive behavior, (2) social reinforcement of adaptive patterns, and (3) various forms of psychotherapy. Counseling sessions were held with parents and reports were sent to referring agencies. A follow-up questionnaire was sent to the parents three months after camp closed. It is concluded that the parents reacted positively to the program and that they perceived their sons as having made gains associated with the camp experience.

Risley, Todd, and Wolf, Montrose. (U. Kansas) "Establishing functional speech in echolalic children." Behaviour Research & Therapy, 1967, 5(2), 73-88.

Summarizes research in the development of speech in echolalic children. The procedures are based on operant behavior-modification techniques such as: (1) shaping and imitation training for the development of speech; (2) fading in of new stimuli and fading out of verbal prompts to transfer the speech from imitative control to control by appropriate stimulus conditions; and (3) extinction and time-out from reinforcement for the reduction of inappropriate behavior in conjunction with the differential reinforcement of appropriate responses which are incompatible with the inappropriate behavior.

Walters, Richard H. (U. Waterloo, Ontario, Canada) Discussion of "Growth of behaviour therapies with children" by Leonard Krasner. Canadian Psychologist, 1967, 8(2), 76-80.

A discussion of Krasner's paper presented at the 1966 Conference on Behavior Modification. Various methods of behavior therapy are outlined and a case study discussed. It is concluded that in dealing with children especially no 2 are completely alike and so behavior therapy should be modified to fit the individual needs of each particular patient.

Wolf, Montrose, et al. (U. Kansas) "Application of operant conditioning procedures to the behavior problems of an autistic child: A follow-up and extension." Behavior Research & Therapy, 1967, 5(2), 103-111.

The modification of an autistic boy's behavior in a nursery school setting is described. The procedures used to deal with his problem behavior such as tantrums, pinching, and toilet training are discussed.