Negativism in the Responses of Autistic Children

NEGATIVISM IN THE VERBAL AND NONVERBAL RESPONSES OF AUTISTIC CHILDREN

by

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ABSTRACT

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Negativism was studied in nine autistic, nine behavior-disturbed, and nine normal children aged five to 12 years in three different stimulus conditions (verbal requests for verbal responses, verbal requests for nonverbal responses, and nonverbal requests for nonverbal responses). Each condition included two tasks which were requested 15 consecutive times. Subjects demonstrated they could perform the tasks before testing, and their responses were scored according to the similarity between the response and the request. Results demonstrated the autistic and behavior-disturbed subjects responded similarly except when requests required verbal responses, in which case the autistic group was much more negative. The results were suggested as having many direct applications in clinical diagnostic and therapeutic interventions, as well as having implications for understanding the language characteristics of autistic children. Areas for further research were discussed.

ABSTRACT

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Négativisme dans des réponses verbales et non verbales d'enfants autistiques.

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Des cas de négativisme furent étudiés chez neuf enfants autistiques, neuf à comportement dérangé et chez neuf enfants normaux, tous agés de cinq à 12 ans, ce dans trois cas différents de stimulus (demandes verbales pour réponses verbales, demandes verbales pour réponses non verbales, demandes non verbales pour réponses non verbales. Chaque cas incluait deux tâches requises 15 fois consécutives. Les sujets démontrèrent qu'ils pouvaient accomplir les tâches avant le moment du test et leurs réponses furent notées selon la ressemblance entre la réponse et la demande. Les résultats démontrèrent que les enfants autistiques et ceux à comportement dérangé répondaient de la même façon, sauf dans le cas de réponses verbales requises pour lesquelles le groupe autistique était beaucoup plus négatif. Les résultats furent suggérés comme ayant plusieurs applications directes au niveau du diagnostic de clinique et au niveau d'intervention thérapeutique, aussi bien qu'ayant des implications pour la compréhension des caractéristiques du langage des enfants autistiques. D'autres champs de travail furent discutés en vue de recherche future.

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TABLE OF CONTENTS

INTRODUCTION

The term "autistic" was first used by Kanner to describe the condition of 11 children whose behavior was so similar that it was proposed as a new and unique syndrome (Kanner, 1943). Since then, this syndrome has been interchangeably termed "early infantile autism", "infantile autism", "autism", (Kanner, 1944), or "Kanner's syndrome". Kanner (1943, 1944, 1957) regarded the two primary diagnostic criteria of autism to be an extreme self-isolation and an obsessive insistence on sameness. These characteristics of behavior are evident from the end of the first (Kanner, 1943) to the second (Kanner, 1957) year of life. The criteria by Kanner are more completely described as unresponsivity to stimuli, withdrawal from social situations, avoidance of eye contact, lack of speech for communication, and adherence to particular patterns of behavior such as rocking (Ward, 1970). Zaslow (personal communication, April 1972) suggested negativism as a central factor in autism. Although the literature on autism indicates an agreement that the pathology is extensive and profound, there are many unresolved issues concerning the accurate diagnosis and assessment of the actual competence level of these children.

LITERATURE REVIEW

Speech and Language

Although Kanner (1943, 1944) stressed that affective withdrawal and obsessive insistence on sameness were the primary symptoms of early infantile autism, and that deficits in language were secondary, Kanner (1946) did describe the language of 23 autistic children. He reported that eight were mute except during emergency situations when the mutism was interrupted by the utterance of an entire appropriate sentence. An example of an "emergency" utterance involved a prune skin stuck in a child's mouth which elicited "Take it out!" (Kanner, 1949). Those children who did have speech were characterized by: echolalia or the parrot-like repetition of others' sentences; pronominal reversals consisting of the child's reference to himself as "you" and to others as "I"; simple verbal negation consisting of the frequent use of the word "no"; and restrictions on the functional use of language such as "metaphorical substitution", "transfer of meaning" and "literalness". These restrictions are exemplified by the autistic child who, when asked: "How much is ten minus four?" replied: "I will draw you a hexagram". Despert (1946), in the discussion following Kanner's article, suggested that all of these phenomena could be observed in normal children.

The incidence of mutism in autism reported in various studies ranges from 28% (Lotter, 1966) to 35% (Kanner, 1946); and the incidence of relatively adequate speech development ranges from 16% (Lotter, 1966) to 43% (Pronovost, Wakstein and Wakstein, 1966) or 65% (Kanner, 1946). These discrepancies in the percentages reported were probably the result of different definitions of adequate speech and criteria of autism utilized. Rutter (1965a) evaluated the speech characteristics of 63 autistic children and reported that 75% of the speaking children in his study exhibited echolalia, and 25% exhibited pronominal reversals. He suggested that language abnormalities were primary in autism. Cunningham and Dixon (1961) recorded the verbal productions of one male autistic child aged seven years over a period of six months in a situation similar to that used by McCarthy (1930). Analyzing the speech quantitatively, and qualitatively, the investigators reported: the language sample was typical of a normal 24 to 30 month old child quantitatively (e.g. in terms of mean length of response and variety of words used); the sample was monotonous (i.e. phrases were frequently repeated); incomplete sentences, imperatives, negation, echolalia, and egocentric speech were more frequent, and questions, answers, personal pronouns less frequent, than in the language of a normal child of 24 to 30 months. The language deficits of autistic children can be summarized as usually being present in the form of failure to develop speech, immediate or delayed echolalia, pronominal reversals, and

impaired communicative function (Bosch, 1970; Vetter, 1970; Hingtgen and Bryson, 1972).

Etiology and Diagnosis

The behavioral symptoms and language characteristics of autistic children have been explained in terms of three different etiological theories: (a) organic factors limiting the capacity of the child to integrate sensory information because of a perceptual and cognitive impairment (Bender, 1956; Goldfarb, 1964, Rimland, 1964, 1968; Rutter, 1965b, 1968; Ornitz and Ritvo, 1968; DesLauriers and Carlson, 1969); (b) psychogenic factors limiting the performance of the child within social situations because of a learned avoidance of humans and interpersonal interaction (Boatman and Szurek, 1960; Ferster, 1961; Mahler, 1965; Cowan, Hoddinot and Wright, 1965; Bettelheim, 1967; Zaslow, 1967; Zaslow and Breger, 1969; Morrison, Miller and Mejia, 1971); or (c) combined organic-psychogenic factors limiting both the capacity and performance of the child because of an organic predisposition or vulnerability to pathology and a pathological relationship of the child with a primary social agent resulting in the failure to develop normal object relations (Kanner, 1957; Garcia and Sarvis, 1964; Schopler, 1965; O'Gorman, 1967; Ward, 1970).

Problems of diagnosis are closely related to the theory of etiology adopted. These problems involve definitions of terms, relative importance of criteria, overlap of symptomatology with other disorders (DeMyer, Churchill, Pontius and Gilkey, 1971), and the purpose to be served by the descriptive label (Kessler, 1972). While most investigators have viewed autism and childhood schizophrenia as separate conditions, Creak, Cameron, Cowie, Ini, MacKeith, Michell, O'Gorman, Orford, Rogers, Shapiro, Stone, Stroh, Vaughn and Yudkin (1964) and O'Gorman (1967) have considered the behavioral characteristics of autism to be part of the "schizophrenic symdrome of childhood". These disagreements regarding diagnosis are the result of the variety of interpretations given the original descriptions by Kanner (1943, 1944), which were inherently vague, and the lack of objective data on the behavior of autistic children. Checklist measures designed by Polan and Spencer (1959), Creak et al., (1964), Rimland (1964), and Ruttenberg, Dratman, Franknoi and Wenar (1966) are slowly replacing subjective clinical impressions as the basis of diagnosis. Such an approach to diagnosis may resolve the contradictions among the theories of etiology by more clearly differentiating the psychoses of childhood rather than looking for a common cause.

Studies of Unresponsiveness

The general behavior most frequently agreed upon as central to the syndrome of autism is the unresponsivity of autistic children to stimuli (Rimland, 1964; Lovaas, Schreibman, Koegel and Rehm, 1971). Descriptive terms such as withdrawal, inaccessability, self-isolation, resistance, and suspected but unconfirmed blindness and deafness, all reflect the unresponsiveness of autistic children. This unresponsivity interferes with the evaluation and treatment of autistic children because of its inconsistency of occurrence in different situations.

There have been two types of research attempting to investigate and explain unresponsivity of autistic children. One group (Goldfarb, 1956; O'Connor and Hermelin, 1965, 1967; Hutt and Ounsted, 1966; Schopler, 1966; Lovaas and Schreibman, 1971; Lovaas et al., 1971) emphasizes the type of non-human stimuli such as artificial light or white noise that may be associated with the unresponsivity, and regards an attentional mechanism dysfunction as the basis of the pathology. Goldfarb (1956) postulated proximal receptor dominance in autistic children as a factor responsible for their unresponsiveness to auditory and visual stimulation. However, Schopler (1966) failed to discover any receptor preferences. O'Connor and Hermelin (1965) compared the responsivity of autistic, mongol and nonmongol-subnormal children to visual and auditory stimuli. The stimuli (light, tone or recorded verbal command) varying in

relative intensities were simultaneously presented on opposite sides of a room. The results showed the autistic group demonstrated position responses and thus differed from the other groups in that they did not respond differentially to stimuli of different intensities, to stimuli in different modalities, or to the different types of auditory stimuli. Lovaas et al., (1971) provided evidence that no one sense modality was impaired in autism, but that failure to respond was the result of autistic children's selective attention. Three groups of children (autistic, retarded and normal) were trained to respond to a complex stimulus consisting of auditory, visual and tactile components. Once this response was established, the individual stimuli were presented separately. The results were that the autistic children responded to one of the cues, the retardates to two and the normals to all three. The data supported the hypothesis that autistic children's attention was "over-selective". Selective attention also involves social stimuli. Hutt and Ounsted (1966) and O'Connor and Hermelin (1967) reported that autistic children attend to photographs and drawings of human faces less than normal controls.

The group of studies presented above included such stimuli as floodlights, white noise, recorded verbal commands, photographs, and inflated blood pressure cuffs, and recordable responses such as orientation direction, attending time, or lever pressing. The results of these studies indicated that autistic children are unresponsive to incoming stimuli, but

that they do not selectively avoid auditory, visual or tactile stimulation. However, the implications of the results are limited to narrowly-defined responses to non-human stimuli in a non-social context.

The second type of research on unresponsivity in autistic children has come from operant conditioning studies. This group (Ferster and DeMyer, 1961; Lovaas, Schaeffer and Simmons, 1965; Ferster, 1966; Lovaas, 1966; Lovaas, Berberich, Perloff and Schaeffer, 1966; Ney, 1967; Lovaas, 1968; Churchill, 1969; Sussmann and Sklar, 1969; Ney, Palvesky and Markely, 1971) reported on the unresponsivity of autistic children to social stimuli such as verbal instructions during interpersonal interaction. These investigators regarded unresponsivity to be acquired as the result of aversive conditioning, conditioned avoidance, or a general failure to learn social cues. The procedures utilized in these investigations included reinforcement, punishment, shaping, prompting and fading as the means to establish and modify responding behavior in autistic children. The results indicated that autistic children learn to respond appropriately within the experimental situation only after many trials. Essentially, autistic children can learn to respond, but they are difficult to condition. Lovaas (1966) reported that 90,000 conditioning trials were required before two monosyllabic words were under stimulus control in one autistic child; and that 2,930 trials were required before the phonemes /m/ and /a/ were under stimulus

control in another autistic child (Lovaas et al., 1966). Ney (1967) and Ney et al., (1971) reported rapid progress in treatment of autistic children only after positive "attitudes" towards interaction had been established. Although these investigations were limited to responding within an experimental condition of one-to-one social interaction, they did indicate that the unresponsiveness of autistic children was pronounced within a social context and in the presence of human stimuli and reinforcers.

Definitions of Negativism

In the studies cited above, a type of unresponsivity classified as negativism (Ney, 1967; Lovaas et al., 1965; Lovaas, 1966; Ney et al., 1971) was described as a major contributing factor to the initial slow rate of treatment progress. From the clinical experience of the writer with autistic children, negativism, or the tendency of autistic children to perform some task other than the one requested, appears to be a feasible explanation of the apparent unresponsivity in autism. Negativism is broadly defined as wilfully contrary behavior, or a refusal to conform to the ordinary requirements of conventional behavior (Levy, 1955). Negativism involves a pattern of social interaction (Hurlock, 1964); that is, behavior which is influenced by the behavior of others.

Negativism is not restricted to autistic children. Ausubel (1950, 1951) and Gesell and Amatruda (1965) viewed negativism as a normal phase of development resulting from the dependent/independent conflict of the child with his social agents and his inability to balance alternatives. Negativism in autistic children is problematic because of its frequency of occurrence (Dehn, 1970). Characteristic behaviors of autistic children such as the avoidance of eye contact, withdrawal from social interaction, tantrums, and frequent use of the word "no" are cited as manifestations of negativism (Zaslow, 1967). Morrison et al., (1971) and Dehn (1970) defined negativism in autism as awareness of the requirements of the stimulus situation and an ability to emit the appropriate response, but a failure to do so upon command. Cowan et al. (1965) described "less-than-chance" performance of autistic children as reflecting negativism. All these definitions of negativism are too general and not well suited for testing. However, Zaslow (personal communications, August, 1970; April, 1972) objectively defined negativism as a pattern of response reversal, incompletion, substitution, or refusal by a child in response to the requests and directives of others, after previous correct performance of the behavior upon request. Although Zaslow's criterion was stated in testable terms, there has been no systematic investigation of this criterion of negativism as applied to autistic children.

Clinical descriptions of negativism in autistic children to requests (Kanner, 1946, 1957; Boatman and Szurek, 1960; Lovaas et al., 1965; Lovaas, 1966; Ney, 1967; Zaslow, 1967; DesLauriers and Carlson, 1969; Zaslow and Breger, 1969; Ney et al., 1971) indicate that autistic children sometimes emit an initial appropriate response to a request followed by a failure to respond again to the same request. Some autistic children begin the correct response, but stop just prior to its completion, or repetitively show resistive behavior so precisely related to the request that their comprehension of the tasks and solutions can be easily inferred. O'Gorman (1967) seemed to be implying negativism when he reported that autistic children respond inconsistently to instructions, and that failure to respond was selective towards certain tasks.

Studies of Negativism

Recent experimental studies have given some indication regarding the type of tasks selectively refused. Negativism of autistic children towards verbal requests for motor responses was experimentally demonstrated by Cowan et al., (1965). When 12 autistic children were given multiple-choice discrimination tasks by means of verbal instructions, it was found that they would randomly perform any task except the one requested. Each subject was individually pretested, and then

requested to "Put the red (or square) one in the box". Three of the 12 stimuli to be discriminated were red (or square), and the subjects should have selected the correct stimuli 25% of the time even if they were guessing. Two of the children obtained perfect scores. However, the other ten subjects made no correct responses. These ten subjects were then given 120 trials with the same task with only correct responses reinforced. Four consistently responded correctly after 60 trials with the same task, while six continued to perform incorrectly more than 75% of the time throughout the 120 trials. The authors made no suggestions regarding the possible reclassification of those children who obtained perfect scores. They did, however, report that these two children had the highest levels of language usage and I.Q.'s of 117 and 122. The less-than-chance performance was interpreted as due to negativism, and demonstrated a distinction between verbally-requested motor responses that autistic children are unable to perform and motor responses they are unwilling to perform.

In two different operant conditioning experiments with two male autistic children, aged seven and ten, Morrison et al., (1971) investigated the relationship between the receptive use of language and negativism. The investigators hypothesized that one method of evaluating autistic children's ability to comprehend verbal requests was to keep the level of task difficulty constant and to observe the effects of the verbal requests on the performance of tasks requiring language

comprehension. If the defect was due to perceptual and cognitive impairments, the child's performance level should be unaffected by variations in the context of the requests. However, if negativism rather than comprehension was of major importance, the child's performance level should reflect his negativism towards compliance of verbal requests. The training procedures involved the elicitation of imitative, motor responses such as placing a block in a box, picking up a milk carton, and putting a napkin upon the lap, in the presence of modelling and verbal cues. Once the subject reached criterion (100% correct), the modelling cue was faded until only verbal cues were presented. Then the three task items (block and box, carton, and napkin) were placed before the subject and the experimenter instructed him to "Go ahead". After an item was responded to by the subject carrying out one of the previously trained responses, he was reinforced and the object responded to was removed. Once all items were responded to, they were again placed before the subject and the instructions were repeated. During this free-choice situation, the subject selected the milk carton 85% of the time. However, the presentation of a verbal request for that item resulted in the subject randomly selecting either of the other two items. These incorrect responses were accompanied by what the authors reported as "conflict" behavior. Once the free-choice situation was re-established, the subject's responses returned to the preferred item. Although these subjects demonstrated a

preference for one item, the presentation of a verbal request for that item did not result in correct responses, but rather in an avoidance of the requested item. The results were interpreted as suggesting the subjects had well-developed receptive language and that failure to respond correctly was not caused by an inability to understand, but by the subjects' negativism to adult requests.

Dehn (1970) investigated the variables associated with the elicitation of negative responses. One experiment was designed to test the hypothesis that: "the more often a verbal request is repeated prior to the child's response, the lower will be the frequency of correct and the higher the frequency of negative responses to the initial request". Using four "autistic-like" children as subjects, three females and one male, the investigator recorded their response behavior under two conditions. Under the A conditions, the experimenter presented a verbal request and repeated the request when the child did not respond within a few seconds or when the child was incorrect. Requests were repeated until the child responded correctly or ten seconds had elapsed since the first request. Under the B conditions, the experimenter made a single verbal request, after which the child was given 20 seconds in which to respond. If the child failed to emit the response or responded incorrectly, the experimenter went on to the next request after a period of 20 seconds had elapsed since the first request. The three female subjects were

verbally requested to emit motor responses: "Give me the red beads", and "Point to the letter d". The one male subject was verbally requested to emit verbal responses: "The little boy went to the store to buy some milk. Where did the little boy go?", and "The little boy went to the school to learn. Where did the little boy go?". Under the A conditions, the mean percentage of negative responses for all subjects was 76%. For the subject verbally requested to respond verbally, the percentage of negative behavior was 90%. Under the B conditions, the average percentage of negative behavior for the group was 52%. For the subject requested to respond verbally, the percentage was 65%. This subject was the only one for whom it was necessary to present another request under the B conditions, and he responded negatively to 100% of these requests. Although the investigator simply concluded that negative responses were more frequent to multiple rather than single requests, she did provide evidence that verbal requests for verbal responses elicit more negativism than verbal requests for motor responses.

Summary of Negativism Studies

The experimental studies cited above defined negativism as either response refusal after a child had demonstrated he was capable of the correct response, or as less-than-chance performance. However, these studies did not

classify the types of negativistic responses in as comprehensive a manner as Zaslow's criteria of negativism would have allowed. Some interesting questions arise upon examination of the percentages of correct and incorrect responses in these studies, such as: did the requests elicit responses which had features congruent to the requested behaviors, or did the requests elicit responses dissimilar to them, and what are the types of requests associated with the most frequent occurrence of negativism? These questions could have been answered if the response behavior had been recorded in terms of a more precise definition of negativism. Although Dehn (1970) provided some evidence of negativism to verbal requests for verbal responses, the investigations focused primarily on the occurrence of negativism within one stimulus condition: that of the experimenter verbally requesting the subject to perform a motor response. These investigations failed to establish any relationship among the type of request, type of requested response, and the type of negativistic response. Thus, the experimental data on negativism in autism are limited to an incomplete definition of negativism within one stimulus condition. In addition, these investigations did not report their selection criteria for autistic subjects and failed to utilize control groups.

STATEMENT OF PURPOSE

As discussed previously, there was considerable evidence (Cunningham and Dixon, 1961; Rutter, 1965a; Lotter, 1966; Pronovost et al., 1966; Bosch, 1970; Vetter, 1970; Hingtgen and Bryson, 1972) that reduced functional use of language was a primary deficit in autism. Since negativism also appears to be an important aspect of the verbal performance of autistic children, it might be expected that verbal requests would elicit more negativism than nonverbal requests, and that requests for verbal responses would elicit more negativism than requests for nonverbal responses. This position is supported by the previously cited investigations that indicated negativism may be more frequently elicited in social interaction which involved verbal requests or responses, as well as by the clinical experience of the writer.

The purpose of the present investigation was to study the frequency and type of negative responses (as defined by Zaslow, personal communication, April, 1972) in children diagnosed as autistic according to the diagnostic scale designed by Creak et al. (1964), behavior-disturbed, and normal to verbal and nonverbal requests for verbal and nonverbal responses. Assuming that both reduced language use and negativism are important aspects of autism, the hypothesis of this study was that the most frequent negative behavior in autistic

children would occur during verbal requests for verbal responses; and conversely, the least frequent negative behavior would occur during nonverbal requests for nonverbal responses. The results should add to an understanding of the relation of negative behavior to language behavior of autistic children, and should thus contribute to the development of techniques for the evaluation of the functional language competence of autistic children, as well as to the clarification of important treatment variables.

The method of investigating negativism to requests used in the present study was to repeatedly instruct nine autistic, nine behavior-disturbed, and nine normal children by verbal and nonverbal requests to perform familar verbal and motor tasks known to be within their repertoire, and then to calculate the frequency and type of responses per series of 15 requests. Each child was tested individually, the number of instructions and the type of task were kept constant for all groups, and the sequence of tasks was counterbalanced to permit comparison of negativistic responses between tasks, and between groups.

METHOD

Subjects

Subjects were 27 children: nine autistic, nine behavior-disturbed and nine normal, aged 5 years 6 months to 12 years 4 months. All came from middle-class families (as determined by annual income) where English was the primary language. The three groups were equated in age, and each group included eight males and one female. Classification of subjects in the three groups was based on: (a) The Nine Pointers to Autism (Creak et al., 1964), and (b) clinical diagnosis and/or parents' reports.

Selection Criteria

All subjects had demonstrated that the experimental responses required were within their behavioral repertoires prior to testing. Therapists or teachers familiar with the experimental subjects were consulted to determine if the children could perform the tasks. When therapists were in doubt, they would informally test the "doubtful" subjects with the experimental tasks to obtain this information. It was assumed that all normal children could perform the tasks.

The Nine Pointers to Autism (Creak et al., 1964) consists of descriptive statements which have been used to clarify and define the "schizophrenic syndrome of childhood" in which the characteristics of autism have been considered imbedded. The nine criteria outlined by the British Working Party included Kanner's original characteristics of autism. Some authorities disagree on certain points (e.g. O'Gorman, 1967), but it has been generally agreed that a child diagnosed as autistic would exhibit from four (Savage, 1966) to six (Ney, 1967) of the nine characteristics.

These criteria were used for nine autistic, nine behavior-disturbed, and nine normal subjects. The points were read to the therapists or teachers who were familiar with the experimental subjects and their judgements as to whether each characteristic was present or absent were recorded. The experimenter evaluated the control subjects. The nine descriptive statements are contained in Appendix A.

Clinical Diagnosis consisted of an evaluation by the clinical psychologist or psychiatrist responsible for the most recent assessment of the subject. This information was either obtained directly from the professionals or from the case histories. Parents' reports were used for the normal subjects.

Table 1 shows the diagnosis, age, sex, medication and diagnostic scores for all subjects used in the study.

Table 1

Description of subjects in the autistic, behavior-disturbed and normal groups.

Subjects	Age (yr.-mo.)	Sex	Medication	Creak Score	Rimland Score
Autistic					
1	5-6	M	Yes	8	-7
2	6-6	M	Yes	8	6
3	7-1	M	No	7	23
4	7-11	M	Yes	4	*
5	8-1	F	Yes	8	35
6	9-2	M	Yes	8	*
7	9-4	M	No	7	26
8	11-2	M	No	4	-9
9	12-3	M	No	6	*
Behavior-Disturbed					
1	5-11	M	No	3	16
2	6-4	M	No	3	*
3	7-10	F	Yes	1	-22
4	8-2	M	Yes	2	-4
5	8-9	M	No	2	29
6	9-3	M	No	2	*
7	10-0	M	No	1	*
8	11-5	M	No	2	2
9	12-4	M	No	3	*
Normal					
1	5-9	M	No	0	-39
2	5-11	M	No	0	-30
3	7-11	F	No	0	-41
4	8-2	M	No	0	-37
5	8-11	M	No	0	-40
6	9-4	M	No	0	-39
7	10-1	M	No	0	-37
8	10-6	M	No	0	-36
9	12-1	M	No	0	-37

* Inpatients for whom checklists could not be completed.

Classification as autistic required that a subject's score on the Creak scale was in the appropriate range and was supplemented by at least one previous clinical diagnosis of autism. Specifically, subjects with scores of four or above on Creak's scale, and with a clinical diagnosis of autism, were placed in the autistic group. The previous diagnoses of this group included: "early infantile autism", "childhood autism", "primary autism with retardation", "moderate autism", or "autism". Subjects tested who were not used in the study included three autistic children who did not respond to any of the requested tasks. The final autistic group consisted of eight males and one female with a mean age of 7 years 4 months (range 5 years 6 months to 12 years 3 months). They had received from two to nine years of treatment. Although the degree of behavioral retardation varied, all subjects responded to simple verbal commands. Their verbal behavior was primarily echolalic with minimal functional use of language. In general these subjects were the most verbal of all autistic children available for the experiment.

Classification as behavior-disturbed required scores below the lowest score of any child in the autistic group and above the highest score of any child in the normal group on the Creak scale. Specifically, the subjects with scores between one and four on Creak's scale, with no previous diagnosis of autism, were placed in the behavior-disturbed group. Previous diagnosis of subjects in this group included: "childhood

schizophrenia","childhood schizophrenia with retardation", "childhood psychosis", "hyperactive and enuretic", or "behaviorally disturbed". This group consisted of eight males and one female with a mean age of 8 years 5 months (range 5 years 11 months to 12 years 4 months). They had received from one to eight years of treatment. Generally, these subjects were less behaviorally retarded than the autistic group and their expressive language was used with more communicative intent. For example, they would ask questions about the apparatus used in the experiment.

Classification as normal required scores below the lowest score of any child in the behavior-disturbed group on the Creak scale. Specifically, subjects with a score of zero on the Creak scale, educational placement appropriate to age level, and no previous history of mental handicaps, were placed in the normal group. One child had a moderate hearing impairment. This group also consisted of eight males and one female with a mean age of 8 years 6 months (range 5 years 9 months to 12 years 1 month). These subjects were obtained from parents working at the University.

The Diagnostic Checklist for Behavior-Disturbed Children - Form E-2 (Rimland, 1964) is a 109-item questionnaire, a copy of which was completed by an adult, preferably the mother, who was familiar with the subject's behavior. Checklists were completed for all subjects except those who were

inpatients. The items included questions concerning the developmental history and behavioral characteristics of the subjects from birth to five years. The complete checklist is contained in Appendix B.

The checklists were completed for six children in the autistic group, five children in the behavior-disturbed group, and nine children in the normal group. Checklists were scored by the Institute for Child Behavior Research[1]. Responses to checklist questions were scored either autistic or non-autistic, and the final "autism score" was determined by subtracting the non-autistic from the autistic score. Rimland (1968, 1971) proposed a checklist score of 21 autistic responses as the cut-off point for the diagnosis of autism. Since then, he has concluded (1971, 1972) that this was a conservative estimate designed to prevent false-positive diagnoses of autism. The scores obtained on the checklists did not always coincide with those used in subject selection.

Materials

The Negativism Test consisted of six tasks specifically designed to elicit responses as a function of three different

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[1] Dr. Bernard Rimland, Institute for Child Behavior Research, 4758 Edgeware Road, San Diego, California 92116.

conditions of stimulus presentation. Two verbally-requested verbal tasks, two verbally-requested motor tasks, and two nonverbally-requested motor tasks constituted the experimental test items. Each subtest included two tasks of increasing complexity which were requested 15 consecutive times. Each requested task required the subject to perform two properly-sequenced behaviors. The subtests were:-

1. Subtest A: Verbal requests for verbal responses.

   Level A1: Presentation of 15 verbal requests: "Say girl, and then say boy".

   Level A2: Presentation of 15 verbal requests: "Say yes please, and then say no thanks".

2. Subtest B: Verbal requests for motor responses.

   Level B1: Presentation of 15 verbal requests: "Give me the block".

   Level B2: Presentation of 15 verbal requests: "Give me the dog, and then give me the cat".

3. Subtest C: Nonverbal requests for motor responses.

   Level C1: Presentation of 15 nonverbal requests: individual imitations of the experimenter removing a peg from a box and placing it into a pegboard. Each model was followed by a pointing cue from the experimenter at the subject.

   Level C2: Presentation of 15 nonverbal requests: individual imitations of the experimenter clapping both hands together once, and then hitting both hands

simultaneously on the table once. Each model was followed by a pointing cue from the experimenter at the subject.

A complete description of this test is contained in Appendix C.

Apparatus

All test sessions were videotaped with a Sony 1 in. videotape recorder and camera. The camera was located six to eight feet to one side of the subject, and the microphone was three to four feet above the subject. Floodlights were used when there was insufficient light, and the lid of the recorder was kept closed to prevent distraction of the subject by the revolving reels of tape.

The tapes were later replayed on a Sony 9 in. video monitor before a panel of three judges. A light, which signalled the end of each judgement period, was located on top of the monitor.

Procedure

All subjects were administered the Negativism Test in a quiet, distraction-free room. Testing of both residential and outpatient subjects was done in their respective

treatment centers. Two normal subjects were tested in a clinical setting and all others were tested in their homes.

Subjects were seated directly across from the experimenter and administered three practice items commensurate with the experimental tasks prior to commencing the first subtest. The instructions used for each practice item were identical to those used in the actual test except for the specific task requested. Once the subject successfully performed two practice items, the pretest material was withdrawn and the first subtest was introduced with the transition phrase: "All right, now we will begin". The instructions for the subtests were:

> "I am going to ask (for subtest A and B) or show (for subtest C) you something to do many times. Every time I ask (or show) you, I want you to do it. Do not do it unless I ask (or show) you. Here we go."

The subtests were presented in a counterbalanced order, as shown in Table 2. After a subtest was completed the subject was told: "All right, now we are going to do something different". Each request for a task was presented 15 times, and upon termination of each request presentation, a 4.5 sec. time interval was allowed for response. Each request and 4.5 sec. time interval was followed by a 0 to 7 sec. pause before the presentation of the next request. There was only a 10 to 20 sec. rest period between each subtest.

No systematic reinforcement was used for any of the responses. However, the experimenter made a written notation

of each response which could have been reinforcing to certain subjects, especially the normals. The experimenter made certain that the subjects were seated in their chair and oriented towards the experimenter before each request was presented. The experimenter had no direct contact with any of the subjects prior to testing.

Judgement of Videotapes

Three paid judges were selected and they observed the videotapes of each test session to determine the type of response emitted by the subjects to each request. The panel of judges consisted of one Ph.D. student and one M.Sc. student in human communication disorders, and one laboratory assistant with a B.A. in psychology. None had any previous clinical experience with autistic children. The judges were informed of the operational definition of each response type. Examples of each response type are contained in Appendix C.

Correct Responses were defined as responses containing all the requested behaviors in the proper sequence initiated within 4.5 sec. after the request. A response was considered correct even if it was accompanied by non-requested behaviors emitted during the time interval.

Reversal Responses were defined as responses containing all the requested behaviors, but in a reversed sequence initiated within 4.5 sec. after the request. A reversal response could be accompanied by non-requested behaviors emitted during the time interval.

Incomplete Responses were defined as responses containing either one of the two responses requested and initiated within 4.5 sec. after the request. An incomplete response could be accompanied by non-requested behaviors emitted during the time interval.

Substitutive Responses were defined as responses containing none of the requested responses, but which contained a response feature topographically similar to the request. That is, if the subject was requested to perform a verbal task (e.g. "Say girl, and then say boy", or "Say yes please, and then say no thanks"), a substitutive response was any other verbal response emitted to the request other than the one requested. Similarly, if the subject was requested to perform a motor task (e.g. "Give me the block", or "Give me the dog, and then give me the cat"), a substitutive response was any other motor response emitted to the request other than the one requested. In general, if the task was verbal and the response was verbal but incorrect, or if the task was motoric and the response was motoric but incorrect, the response was

classified as substitutive.

Refusal Responses were defined as responses containing none of the requested behaviors emitted within 4.5 sec. after the request and were of two types. One type consisted of no response at all. A second type was the opposite of the substitutive response. That is, if the task was verbal and the response was motoric, or if the task was motoric and the response was verbal, the response was a refusal. Refusal responses were by definition accompanied by non-requested behaviors emitted during the time interval.

The judges were instructed to rate all responses as one of the above types. A complete description of the instructions to the judges is contained in Appendix D.

Scoring. A scoring system was constructed on a theory by Zaslow (personal communication, April, 1972) that these types of responses (correct, reversed, incomplete, substitutive, and refusal) formed a continuum of increasing degrees of negativism extending from correct to refusal. Because all the subjects demonstrated that they could perform the experimental tasks prior to testing, and because they demonstrated comprehension of the instructions on the pretest practice tasks, the types of responses they emitted were considered to reflect the degree of compliance or negativism in response to the requests. A numerical score was assigned to each response

type based on the topographical similarity or dissimilarity between the request and the response. When the request and response were topographically the same, as in correct responses, the negativism score assigned was zero. When the request and response were topographically opposite, as in refusal responses, the negativism score assigned was four. Reversal, incomplete, and substitutive responses were considered gradations between correct and refusal and were assigned scores of one, two and three respectively.

Specifically, all requested responses required two appropriate behaviors emitted in a specific sequence to be correct. Reversal responses contained the appropriate behaviors, but were not emitted in the requested sequence. Thus, reversal responses were one requested response feature (sequence) removed from correct, and received a negativism score of one. Incomplete responses contained one requested response feature (an appropriate behavior), but were not emitted with the other appropriate behavior or in the requested sequence. Thus, incomplete responses were two requested response features (one appropriate behavior and sequence) removed from correct, and received a negativism score of two. Substitutive responses contained none of the requested response features, but were verbal when the request was for a verbal task or motoric when the request was for a motor task, and thus received a negativism score of three. Refusal responses also contained none of the requested response features; however, unlike the

substitutive responses, they were motoric when the request was for a verbal task, verbal when the request was for a motor task, or else no response at all was made. Refusal responses received a negativism score of four. All judgements were scored according to this system.

Mean judgement scores were obtained by applying the scoring system described above to each of the ratings of the judges. Scores representing the judgement totals of the three judges for each task (15 responses) were summed. This figure was then divided by three producing a mean judgement score for each subject on each task.

RESULTS

Interjudge Agreement

Interjudge reliability was calculated by dividing the number of responses that all three judges agreed upon by the total number of responses judged. There was complete agreement among the three judges for 93% of the responses. There was also 90% agreement between their judgements and those made by the experimenter at the time of testing. More than 99% of all responses were agreed upon by at least two of the three judges, with complete disagreement for only three responses out of 2,430. The percentages of complete interjudge agreement for the normal, behavior-disturbed and autistic groups were 100%, 92% and 89% respectively. The modal ratings of the three judges for each response of the three groups are contained in Appendix E.

Analysis of Data

Since subjects in the normal group responded to all requests with correct responses, they were excluded from further analyses. The mean judgement scores and order of subtest presentation for each subject on each task are shown

in Table 2. For purposes of statistical analysis these means were transformed to square roots to normalize the distribution of scores, as shown in Table 3. The autistic group averaged more negativistic responses than the behavior-disturbed on every task except task C2. The difference between groups was relatively small on Test B (verbal requests for nonverbal responses) and Test C (nonverbal requests for nonverbal responses), but considerably greater on Test A (verbal requests for verbal responses). The autistic subjects' mean negativism score on Test A (verbal requests for verbal responses) was twice as high as that of the behavior-disturbed subjects. No autistic and only two behavior-disturbed subjects responded correctly to all verbal requests for verbal responses. The only occasion that negativism scores were greater for the first level of any subtest was on level A1 for the autistic group, with five subjects responding more negatively on the first level.

Statistical analysis of the transformed negativism scores was performed to compare the autistic and behavior-disturbed subjects on the six tasks. If there were no significant differences in the negativism scores on the three tests, then it might be inferred that negativism in the verbal and nonverbal responses of these children was a generalized behavior pattern that was not specific to a class of responses or requests. However, significant differences among the tests could indicate a distinguishable response pattern specific to

Table 2

Mean negativism scores and subtest order for the autistic and behavior-disturbed subjects on the two levels of the three subtests.

Subjects	Subtest Order	Subtests A1	A2	B1	B2	C1	C2
Autistic							
1	BCA	48.00	50.00	0.00	7.33	18.33	30.33
2	CAB	56.67	60.00	10.00	10.67	27.33	50.33
3	BAC	37.33	21.33	3.00	12.33	0.00	2.00
4	ABC	45.33	48.33	9.67	1.00	12.00	6.33
5	BAC	13.00	6.67	0.00	5.67	19.00	6.33
6	ACB	49.33	31.67	24.00	20.33	20.67	25.67
7	BCA	26.67	30.67	3.67	5.33	0.00	7.67
8	ABC	5.00	17.67	0.67	9.00	8.00	0.67
9	CAB	30.00	30.00	0.00	0.00	0.00	4.33
Task Means		34.59	32.93	5.67	7.96	11.70	14.85
Test Means			33.76		6.82		13.28
Group Mean					17.95		
Behavior-Disturbed							
1	CAB	0.00	2.00	0.00	6.33	3.67	0.67
2	CBA	17.00	8.33	0.00	4.00	5.33	16.33
3	CBA	16.67	32.00	24.33	28.67	4.67	25.67
4	ABC	15.00	18.00	2.00	8.00	3.00	15.00
5	ABC	0.67	1.33	3.00	0.00	0.00	0.00
6	ACB	30.00	30.33	0.00	7.33	0.00	14.00
7	BCA	0.00	0.00	0.00	0.00	0.00	10.67
8	ACB	30.00	30.00	2.67	31.00	50.67	24.67
9	BAC	0.00	0.00	0.00	0.00	4.00	30.00
Task Means		12.15	13.55	3.56	9.48	7.93	15.22
Test Means			12.85		6.52		11.58
Group Mean					10.32		

Table 3

Transformed negativism scores and subtest order for the autistic and behavior-disturbed subjects on the two levels of the three subtests.

Subjects	Subtest Order	Subtests A1	A2	B1	B2	C1	C2
Autistic							
1	BCA	6.93	7.07	0.00	2.71	4.28	5.51
2	CAB	7.53	7.75	3.16	3.27	5.23	7.09
3	BAC	6.11	4.62	1.73	3.51	0.00	1.41
4	ABC	6.73	6.95	3.11	1.00	3.46	2.52
5	BAC	3.61	2.58	0.00	2.38	3.00	2.52
6	ACB	7.02	5.63	4.90	4.51	4.55	5.07
7	BCA	5.16	5.54	1.92	2.31	0.00	2.77
8	ABC	2.24	4.20	0.82	3.00	2.83	0.82
9	CAB	5.48	5.48	0.00	0.00	0.00	2.08
Task Means		5.65	5.54	1.74	2.52	2.59	3.31
Test Means		5.59		2.13		2.95	
Group Mean				3.56			
Behavior-Disturbed							
1	CAB	0.00	1.41	0.00	2.52	1.92	0.82
2	CBA	4.12	2.89	0.00	2.00	2.31	4.04
3	CBA	4.08	5.66	4.93	5.35	2.16	5.07
4	ABC	3.87	4.24	1.41	2.83	1.73	3.87
5	ABC	0.82	1.15	1.73	0.00	0.00	0.00
6	ACB	5.48	5.51	0.00	2.71	0.00	3.74
7	BCA	0.00	0.00	0.00	0.00	0.00	3.27
8	ACB	5.48	5.48	1.63	5.57	7.12	4.97
9	BAC	0.00	0.00	0.00	0.00	2.00	5.48
Task Means		2.65	2.93	1.08	2.33	1.92	3.47
Test Means		2.79		1.70		2.70	
Group Mean				2.40			

a particular response condition.

Table 4 summarizes the results of a three-way analysis of variance. There was no significant difference between groups in overall mean negativism scores (3.56 for the autistic group and 2.40 for the behavior-disturbed group). There were significant ($p < .01$) differences among the tests (means of 4.19 for Test A, verbal requests for verbal responses; 1.92 for Test B, verbal requests for nonverbal responses; and 2.82 for Test C, nonverbal requests for nonverbal responses); and there was a significant ($p < .01$) difference between levels of the tests (2.60 for Level 1 and 3.35 for Level 2). There was also a significant ($p < .01$) interaction between diagnosis (autistic or behavior-disturbed) and tests (verbal requests for verbal responses, verbal requests for nonverbal responses, and nonverbal requests for nonverbal responses).

Newman-Keuls tests (Winer, 1971) were carried out to further analyse the differences between the tests. There was a significant ($p < .01$) difference between Test A (verbal requests for verbal responses) and Test B (verbal requests for nonverbal responses), and a significant ($p < .05$) difference between Test A (verbal requests for verbal responses) and Test C (nonverbal requests for nonverbal responses). The mean negativism scores on Test B (verbal requests for nonverbal responses) and Test C (nonverbal requests for nonverbal responses) were not significantly different.

Table 4

Analysis of variance on the transformed negativism scores.

Source	df	MS	F
Diagnosis (D)	1	36.44	2.71
Tests (T)	2	94.22	15.69*
Levels (L)	1	15.03	18.82*
Subjects within groups (Ss)	16	215.20	
D x T	2	36.46	6.07*
D x L	1	2.16	2.71
T x L	2	5.99	2.13
T x Ss within groups	32	96.11	
L x Ss within groups	16	12.78	
D x T x L	2	0.26	0.09
T x L x Ss within groups	32	45.12	

* $p < .01$

Figure 1 shows the interaction between groups on the negativism test scores. The transformed negativism scores are presented on the ordinate, while the subtests are plotted along the abscissa. Although the autistic group tended to respond more negatively to all requests, they were quite similar to the behavior-disturbed group except on Test A (verbal requests for verbal responses). It is quite clear that the groups differed only with respect to verbal requests for verbal responses, for which the autistic group were much more negative.

As shown in Table 5, there were different degrees of overlap between the groups for the three tests. The lowest score for the autistic subjects on Test C (nonverbal requests for nonverbal responses) was 0.71, and eight subjects in the behavior-disturbed group had scores above this figure. The highest score for the behavior-disturbed subjects on this test was 6.05, and eight autistic subjects had scores below this figure. The lowest score for the autistic subjects on Test B (verbal requests for nonverbal responses) was 0.00, and seven subjects in the behavior-disturbed group had scores which were above this figure. The highest score for the behavior-disturbed subjects on this test was 5.14, and all autistic subjects had scores below this figure. The lowest score for the autistic subjects on Test A (verbal requests for verbal responses) was 3.10, and only five subjects in the behavior-disturbed group had scores which were above this figure. The highest score for the behavior-disturbed subjects on this test was 5.50, and six

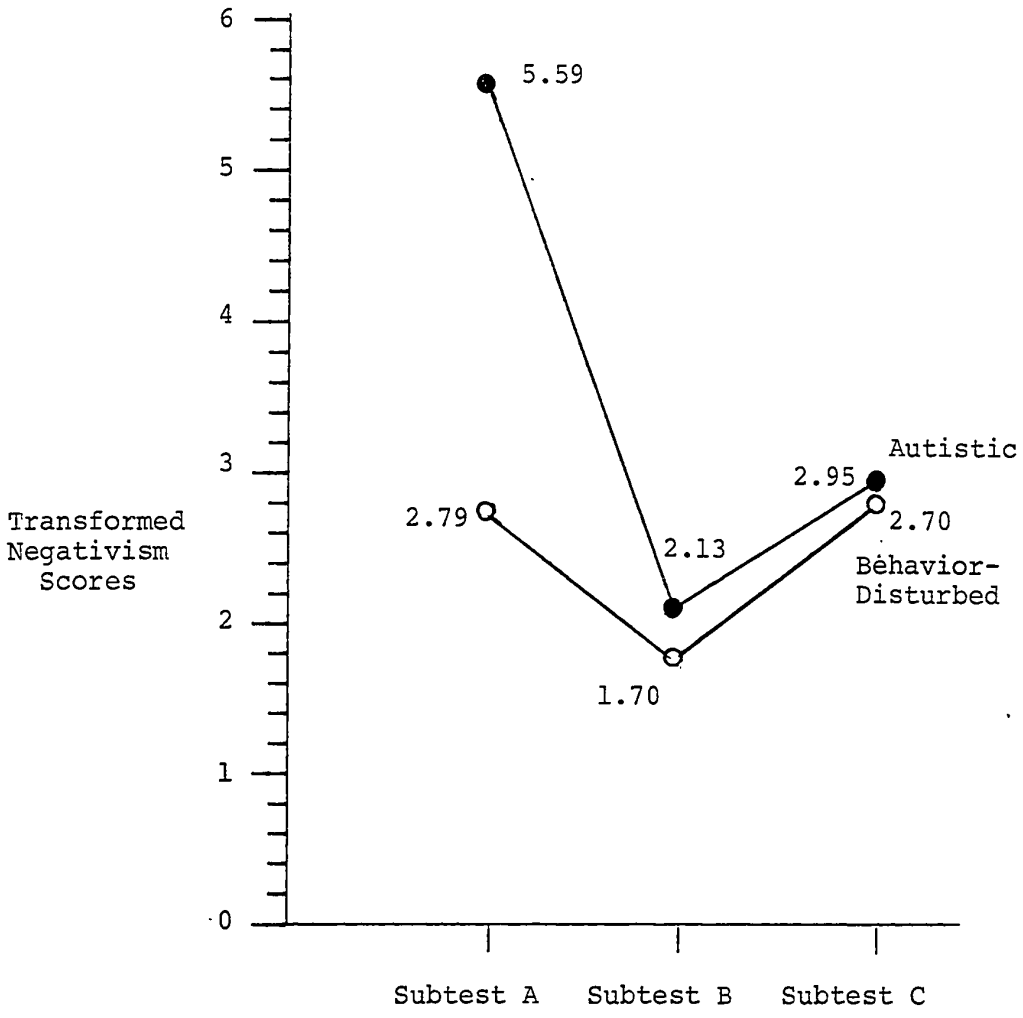

Figure 1. Graph of the transformed negativism scores on the three subtests for the autistic and behavior-disturbed groups.

Table 5

Frequency distribution of negativism scores for the autistic and behavior-disturbed subjects where the two levels have been pooled for each subtest.

Scores	Subtests					
	A		B		C	
	Autistic	Behavior-Disturbed	Autistic	Behavior-Disturbed	Autistic	Behavior-Disturbed
8	1					
7	2					
6	1	1			1	1
5	3	2	1	1	2	
4		2		1		2
3	2		2		2	2
2			3	1	1	2
1		2	2	4	3	1
0		2	1	2		1

autistic subjects had scores below this figure. No subject in the behavior-disturbed group received a negativism score as high as the highest score of the autistic group, and no subject in the autistic group received a negativism score as low as the lowest score of the behavior-disturbed group on Test A (verbal requests for verbal responses). Thus, the least amount of individual subject overlap between these groups was for negativism scores on Test A (verbal requests for verbal responses).

The total number of each response type emitted by subjects in the autistic and behavior-disturbed groups is shown in Table 6. On Test B (verbal requests for nonverbal responses) and Test C (nonverbal requests for nonverbal responses), the distribution of response types was similar for both groups. However, on Test A (verbal requests for verbal responses), the distribution was markedly different. The autistic group responded with an average of 29 correct responses as compared with 81 correct responses for the behavior-disturbed group on this test. The relatively low number of correct responses for the autistic group indicates their lack of compliance to the requests. The autistic group averaged 32 refusal responses on this test, while the behavior-disturbed group averaged only one refusal response to the 270 verbal requests for verbal responses. This high number of refusal responses for the autistic group indicates that the lack of compliance was emitted in the form of refusal responses, the most severe form

Table 6

Total number of correct, reversal, incomplete, substitutive and refusal responses by the autistic and behavior-disturbed groups to the two levels of the three subtests.

Group	Response Type	Subtests A1	A2	B1	B2	C1	C2
Autistic							
	Correct	28	30	115	88	89	84
	Reversal	0	0	8	34	17	9
	Incomplete	45	53	0	4	16	22
	Substitutive	34	17	1	5	5	5
	Refusal	28	35	11	4	8	15
Behavior-Disturbed							
	Correct	86	76	124	86	114	88
	Reversal	3	5	2	25	0	4
	Incomplete	37	46	0	14	2	11
	Substitutive	8	8	5	7	15	9
	Refusal	1	0	4	3	4	23

of negativism. The numbers of other response types were relatively similar between these two groups. The high number of refusal responses by the autistic subjects on this test indicates the overlap between this group and the behavior-disturbed was considerably smaller when response type was considered, and supports the previous finding that the groups differed only with respect to verbal requests for verbal responses.

Analysis of Individual Subject's Performance

Inspection of the data in Tables 1 and 3 reveals no consistent relationship within groups between negativism scores and order of subtest presentation, diagnostic scores on either the Creak or Rimland scales, the presence or absence of medication, the age, or sex of the subjects. In the autistic group, subjects 1 and 2 received the highest negativism scores for both groups on Test A. These subjects were both male and were both on medication. They were also the youngest of the subjects within the groups, both had relatively high Creak scores of eight, and relatively low Rimland scores of minus seven and six respectively. Subject 5 in the autistic group had a Creak score of eight and a high Rimland score of 35, but had the lowest negativism score on Test A for the group. This subject was a female and on medication. For the autistic

group, then, young age, male sex, the presence of medication, and low Rimland scores were associated with the highest negativism scores on Test A; and female sex, the presence of medication, and high Rimland scores were associated with the lowest negativism score on Test A.

In the behavior-disturbed group, subject 3, a female on medication who received the second highest overall negativism score for her group, had a relatively low Creak score of two and the lowest Rimland score of -22. Subject 8, a male not on medication who received the highest negativism scores on all tests for his group, also had relatively low scores of two on both diagnostic scales. Subject 5, a male who received the lowest overall negativism score for both groups, had a relatively low Creak score and a high Rimland score of 29. For certain subjects in both groups, then, there was an inverse relationship between Rimland and negativism scores.

DISCUSSION

Unlike previous studies and clinical descriptions of negativism in autistic children, the present study involved a comprehensive definition and measurement of negative responses under different stimulus conditions. Negative responses were not observed in the normal group. The autistic and behavior-disturbed subjects demonstrated negativism by reversal, incompletion, substitution and refusal of verbal and nonverbal responses which they were able to perform. The results demonstrated more negativism in autistic children than in behavior-disturbed children, and considerably more negativism in both of these groups than in the normal group.

The results of this study provided strong support for the hypothesis that the most frequent negative behavior in autistic children would occur during the verbal requests for verbal responses. Higher negativism scores on Test A (verbal requests for verbal responses) had been predicted because both negativism and a reduced functional use of language were factors generally associated with autism. The converse of the hypothesis - that the least frequent negative behavior would occur during nonverbal requests for nonverbal responses - was not supported. In fact, the difference in negativism scores for the autistic group between Test B (verbal requests for nonverbal responses) and Test C (nonverbal requests for nonverbal responses)

Relationship of Results to Previous Studies

Although the procedures used in the present investigation differed from those of previous studies of negativism (Cowan et al., 1965; Dehn, 1970; Morrison et al., 1971), some comparisons are possible. In the study by Cowan et al. (1965), it was reported that ten out of 12 autistic children responded correctly to less than 25% of the verbal requests for discriminative motor responses. As shown in Table 6, the total number of correct responses on Test B (verbal requests for nonverbal responses) for the autistic group was 203, or 75% of the 270 requests on this subtest. Thus, there was a difference of 50% in the reported negative responses of the two studies. This difference may have been attributable to the types of discriminative tasks used in the previous study, or to the scoring method and the relatively long (4.5 sec.) time interval allowed for response in the present study.

Dehn (1970) provided evidence that the most frequent negative responses elicited from one autistic child occurred during verbal requests for verbal responses; and O'Gorman (1967) suggested that autistic children's failure to respond was selective towards certain tasks. These conclusions were supported by the results of the present study. Negativism was not observed as a generalized behavior pattern that some clinical descriptions (Boatman and Szurek, 1960; Bettelheim, 1967) would suggest, but rather a mode of responding to

indicated that, if anything, nonverbal requests for nonverbal responses tended to elicit more negative responses than verbal requests for nonverbal responses. Lower negativism scores on Test C (nonverbal requests for nonverbal responses) had been predicted by the second hypothesis because there were no verbal components in either the request or the response. Until there has been further research on negative responses in additional stimulus conditions, such as nonverbal requests for verbal responses, it would be difficult to determine why the second hypothesis was not supported.

The fact that over half of the autistic subjects received higher scores on the first-level than the second-level task of Test A (verbal requests for verbal responses) indicated that an increase in the complexity of the requested verbal responses did not increase negativism scores. This could suggest that complexity of verbal requests or complexity of verbal responses does not influence negativism scores. Further research on negativism under an increased number of experimental conditions which assessed response and request complexity separately would be needed before the exact influence of these factors on negativism scores could be determined.

particular stimulus situations. The results were in agreement with the report of Morrison et al. (1971), that response refusal by autistic children was not caused by their inability to understand but by their negativism towards complying to adult requests.

Implications for Understanding Negativism

The negativism theory of Zaslow (personal communications, August, 1970; April, 1972) provided a useful conceptual framework within which to observe and record the responses of autistic and behavior-disturbed children. Defining negativism as a pattern of response reversal, incompletion, substitution, or refusal by children in response to the requests of others, after previous correct performance of the behavior upon request; and postulating that these types of responses formed a continuum of increasing degrees of negativism, provided a new method of comparing these types of children. Although it is not clear from these data if the response types did form a continuum, inspection of the number of each response type for each task in Table 6 suggests that the frequency of responses by the autistic subjects in the various categories may have depended upon the exact requirements of the specific tasks. For example, the number of reversal responses tended to be low and the number of incomplete responses tended to be high when

a verbal request required a verbal response. In contrast, the number of reversal responses tended to be high when verbal and nonverbal requests required a nonverbal response. These results do not consistently support or refute the hypothesis that correct, reversed, incomplete, substitutive and refusal responses form a continuum of increasing degrees of negativism. However, this system of classifying responses did provide a means of focusing on specific responses under specific stimulus conditions. This suggests the need for further research examining the relation of the response types to the specific tasks' requirements.

The present results suggest that negativism can be defined in terms of a quantifiable index of a child's lack of compliance. Negativism scores clearly differentiated the autistic and behavior-disturbed groups from the normal group on all tests. The scoring procedure also differentiated between autistic and behavior-disturbed children in one stimulus condition, verbal requests for verbal responses. Modification of certain response categories might help to differentiate these children in other situations. For example, responses were scored as correct, reversed, incomplete, substitutive, or refused even if they were accompanied by nonrequested behaviors emitted during the 4.5 sec. response interval. If responses accompanied by nonrequested behaviors had been assigned extra weighting, there may have been more difference in negativism scores between the autistic and behavior-disturbed groups

on all tests. This procedural change would have certainly increased the negativism scores for the echolalic verbal responses (e.g. the child responds to the request "Say girl and then say boy", with "Say girl and then say boy", instead of "Girl boy"), which were scored as correct, and were relatively frequent for the autistic group's correct responses. This procedural change would have also increased the negativism scores for the autistic children for requested nonverbal responses, because behaviors such as rocking, singing, humming, laughing, and posture shifting accompanied the responses of the autistic children more frequently than the responses of the behavior-disturbed children. In addition, the types of refusal responses, i.e. responses which were motoric when the task was verbal, verbal when the task was motoric, or else no response at all, could have been given different points by assigning additional weighting to the latter response. The scoring system might also have been more sensitive to differences in negative responses if the weighting procedures included measurements of response latency, and assigned additional weighting to those responses which were emitted after a relatively long latency period. The negativism test with further modification and experimentation may offer a more precise method of description of autistic and behavior-disturbed children.

Implications for Understanding the Language of Autism

Since this experiment has demonstrated that social interaction which involves verbal requests for verbal responses elicits the greatest number of negative responses, the implication of the results must lead to serious consideration of certain theoretical positions regarding the language characteristics of autistic children. As discussed previously, the concepts of reinforcement (Ferster, 1961; Lovaas, 1966; Lovaas, 1968) and negativism (Zaslow, personal communication, April, 1972) provide a means of understanding some of the language characteristics of autism. Verbal responses are behavior and behavior is learned. If the negative verbal responses by autistic children were learned as a mode of response to verbal requests for verbal responses, then other stimulus conditions where verbal responses were required but not verbally requested might be less likely to elicit negative responses. This position has support from Kanner's (1946, 1949) observations that certain autistic children were mute except during emergency situations when the mutism was interrupted by the utterance of an entire, appropriate sentence. These children could have learned to respond to verbal requests for verbal responses with refusal responses, but would respond appropriately to an "emergency" stimulus condition (a nonverbal request for a verbal response) which did not have the same reinforcement history as the former condition. Further

research could include an additional stimulus condition where negativism scores would be compared during verbal and "emergency" (nonverbal) requests for verbal responses.

Echolalia is another language characteristic of autism which is relevant to the results of this experiment. Although echolalic responses were not the only responses emitted by the "echolalic" autistic children used in this experiment, seven of the autistic children tested had previous speech evaluations by speech pathologists which explicitly labelled their verbal behavior as echolalic, i.e. the "parrot-like" repetition of the phrases and sentences of others. If this label were accurate, these seven children should have received negativism scores of zero when verbally-requested to respond verbally. These seven children would simply have to echo the request to be correct; however, none of them consistently did. In fact, the autistic child with the highest negativism score on Test A (verbal requests for verbal responses) was "echolalic". The relative infrequency of totally echolalic responses from the "echolalic" autistic children used in this experiment indicates a reconsideration of the use of this language label. It is suggested that echolalia could be a form of verbal negative response. These responses may have been learned quite early in development and the child could have then failed to be able to attach conventional semantic meaning to these negative utterances, resulting in a form of expressive language which could not be used for interpersonal communication.

The need for further research in evaluating how autistic children respond to requests from agents in their social environment at all stages of development appears important for the greater understanding of the language of autism.

Implications for Diagnosis

The results of the present study suggest that individuals working with autistic children should not assume that failure to respond appropriately verbally reflects an inability to do so. The responses emitted by autistic children during assessment or social interactions may not reflect the child's competence, but rather a negative reaction to specific stimulus conditions. This information should caution individuals intervening diagnostically not to make premature judgements about the child; and it should serve as a cause for guarded optimism for those intervening therapeutically in regard to the potential achievement of these children, especially with respect to language.

Although this study utilized both a previous diagnosis of autism and a score of four or above on the scale designed by Creak et al. (1964) for classification of subjects in the autistic group, the diagnostic scores provided by Rimland (personal communication, January, 1973) were frequently in disagreement with these criteria. As discussed previously,

this disagreement had been expected. The checklist designed by Rimland (1964) had been used in this study to provide additional diagnostic data, and also to exemplify the disagreement which currently exists in regard to the diagnosis of autistic children. The subject selection criteria used in the present study certainly had some influence upon the results, as subject selection has influenced the results of all previous studies with autistic children. However, it would be difficult to determine the extent of this influence until the study had been repeated using additional diagnostic criteria. The implications of the results of this study in relation to the present lack of agreement regarding diagnosis indicate that the actual frequency and type of responses by children may provide more information than the diagnostic label. Until a consensus regarding diagnosis has been achieved, further research will have to observe the behavior of autistic children classified by a variety of diagnostic methods.

Since testing situations which involve the elicitation of verbal responses by autistic children would be apt to elicit negative responses, language evaluations which characteristically require verbal responses would be most adversely influenced by negativism. The diagnostician could use this information to his advantage. If during the course of a language evaluation a child began to respond inconsistently by refusing to perform some tasks and correctly responding to others, the diagnostician could return to a task that the child

had previously emitted upon request and repeatedly request that response. If the child responded to the requests with negative responses, then it might be concluded that the behavior elicited for the other tasks may not be representative of the child's linguistic competence. However, if the child repeatedly responded with correct responses, then it would be more probable that the other responses were not influenced by negativism and do represent the child's competence level. One deterring factor to this approach would be the totally nonresponsive child, because this approach requires some previously emitted response by the child upon request. Further research investigating the relationship between negativism and linguistic competence in autistic children would assist in clarifying the extent to which apparent language pathology is an artifact of negativism to verbal requests for verbal responses.

Implications for Treatment

Although the hypothesis that the response categories used in this study were on a continuum of increasing degrees of negativism was not supported or refuted, it may have some therapeutic use, since it may reveal more about the actual response behavior than the traditional "correct/incorrect" concept. The concept of negativism upon which the scoring

system was based provides an index of how far a particular response deviates from correct, and thus suggests the amount of treatment required. For example, one might speculate that an autistic or behavior-disturbed child who responded with refusal or substitution responses might require more treatment or different treatment procedures than the child who responded with incomplete or reversal responses. Thus, an autistic or behavior-disturbed child's negativism score may be a useful prognostic indicator or perhaps one of the indicators of the type of therapeutic procedures required.

Therapeutic interventions concerned with increasing the frequency of imitative responses from autistic and behavior-disturbed children might encounter fewer negative responses if they included requests for nonverbal responses. It is suggested that regardless of diagnosis the negativism test could be administered and the results of the test could then be used to design therapy for the tasks which elicited the least negativism in the individual child. In most cases diagnosed as autistic this task would be nonverbal. These types of tasks could be attempted during the initial stages of therapy or at any time that successful performance was important. If initial attempts at eliciting verbal responses resulted in negative responses, it might be necessary to return to a motor response which is associated with the desired verbal response. For example, an autistic child who consistently emits refusal responses to the verbal requests for a verbal response: "Say

mama", may first have to consistently respond correctly to the request: "Move lips", before the verbal response can be established. The present practices (Ferster, 1961; Ferster and DeMyer, 1961; Lovaas et al, 1966; Ney, 1967; Lovaas, 1968) of beginning therapy with such motor responses as sitting, orienting and looking are compatable with the implications of this study. Also, since negativism is a mode of response which influences verbal more than nonverbal responses, it may be found optimal for treatment to be restricted to requests for nonverbal responses until all measurable negativism has been extinguished. Failure to accomplish this may have been responsible for the very large number of trials found to be necessary for bringing verbal responses under stimulus control (Lovaas, 1966; Lovaas et al, 1966). Any decrease in negative responses to requests for nonverbal responses may generalize to requests for verbal responses and may be an important treatment variable. Further research on treatment might compare the number of trials required to establish a verbal response in autistic children with and without first decreasing their negative responses to verbal requests for nonverbal responses.

SUMMARY AND CONCLUSIONS

The present study was designed to determine the frequency and type of negative responses in autistic, behavior-disturbed and normal children to verbal requests for verbal responses, verbal requests for nonverbal response, and nonverbal requests for nonverbal responses. Negativism was defined as a pattern of response reversal, incompletion, substitution, or refusal by children in response to the requests and directives of others, after previous correct performance of the behavior upon request. The hypothesis was that the most frequent negative behavior in autistic children would occur during the verbal requests for verbal responses; and conversely, that the least frequent negative behavior would occur during the nonverbal requests for nonverbal responses.

Three tests consisting of two increasingly complex tasks were designed to elicit responses as a function of the three stimulus conditions. Subject selection was based on their ability to perform the tasks, and each group consisted of eight males and one female. Each task was requested 15 consecutive times, and negativism scores were based on the topographical similarity of the response and request according to a scoring procedure developed by Zaslow (personal communication, April, 1972). Judges observed the videotapes of each test session and determined the type of response emitted to each

request.

Subjects in the normal group responded to all requests with correct responses and were excluded from further analyses. Statistical analysis of the negativism scores was performed to compare the autistic and behavior-disturbed subjects on the six tasks. Although there was no significant difference between these groups in overall mean negativism scores, there was a significant interaction between diagnosis (autistic or behavior-disturbed) and tests (verbal requests for verbal responses, verbal requests for nonverbal responses, or nonverbal requests for nonverbal responses). This interaction demonstrated that the groups differed only with respect to verbal requests for verbal responses, for which the autistic group were much more negative.

The results of this study provided support for the hypothesis that the most frequent negative behavior in autistic children would occur during the verbal requests for verbal responses. However, the hypothesis that the least frequent negative behavior would occur during nonverbal requests for nonverbal responses was not supported by these data. In contrast to previous clinical descriptions and experimental studies of negativism in autistic children, this study provided a useful method of defining and measuring negativism in different stimulus conditions. The results were interpreted as suggesting that negativism scores on verbal requests for verbal responses may be an important factor in differentially diagnosing autistic

and behavior-disturbed children. These results also suggested direct applications for diagnostic and therapeutic interventions with autistic children, as well as having implications for understanding the linguistic competence of autistic children. A number of areas for further research were discussed.

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APPENDIX A

NINE POINTERS TO AUTISM

NINE POINTERS TO AUTISM

The Nine Pointers specified by Creak et al. (1964) were:-

Point 1: Gross and sustained impairment of emotional relationships with people. This includes the more usual aloofness and empty clinging (so-called symbiosis): also abnormal behavior towards other people as persons, such as using them, or parts of them, impersonally. Difficulty in mixing and playing with other children is often outstanding and long-lasting.

Point 2: Apparent unawareness of his own personal identity to a degree inappropriate to his age. This may be seen in abnormal behavior towards himself, such as posturing or exploration and scrutiny of parts of his body. Repeated self-directed aggression, sometimes resulting in actual damage, may be another aspect of his lack of integration (see also Point 5), as also the confusion of personal pronouns (see Point 7).

Point 3: Pathological preoccupation with particular objects or certain characteristics of them, without regard to their accepted functions.

Point 4: Sustained resistance to change in the environment and a striving to maintain or restore sameness. In some instances behavior appears to aim at producing a state of perpetual monotony.

Point 5: Abnormal perceptual experience (in the absence of discernible organic abnormality), implied by excessive, diminished, or unpredictable response to sensory stimuli - for example, visual and auditory evidence (see also Points 2 and 4), or insensitivity to pain or temperature.

Point 6: Acute, excessive and seemingly illogical anxiety. This is a frequent phenomenon and tends to be precipated by change, whether in material environment or in routine, as well as by temporary interruption of a symbiotic attachment to persons or things (compare Points 3 and 4, and also 1 and 2). Apparently commonplace phenomena or objects seem to become invested with terrifying qualities. On the other hand, an appropriate sense of fear in the face of real danger may be lacking.

Point 7: Speech may have been lost, or never acquired, or may have failed to develop beyond a level appropriate to an earlier stage. There may be confusion of personal pronouns (see Point 2), echolalia or other mannerisms of use and diction. Though words or phrases may be uttered, they may convey no sense of ordinary communication.

Point 8: Distortion in motility patterns - e.g., (a) excess as in hyperkinesis; (b) immobility as in katatonia; (c) bizarre postures or ritualistic mannerisms, such as rocking and spinning (themselves or objects).

Point 9: A background of serious retardation in which islets of normal, near normal, or exceptional intellectual function or skill may appear.

APPENDIX B

DIAGNOSTIC CHECKLIST

FOR BEHAVIOR-DISTURBED CHILDREN

Institute For Child
Behavior Research
4758 Edgeware Road
San Diego, Calif. 92116

DIAGNOSTIC CHECK LIST FOR BEHAVIOR-DISTURBED CHILDREN
(Form E-2)

Name of Child _____

Birth Date _____

Person Completing this form: _____

Street Address: _____

City: _____

Relationship to Child: Mother_____ Zip _____

Father_____ Other_____

Father's Occupation _____

Mother's Occupation (Present)_____

(Before Marriage)_____

Has this child been diagnosed before?

If so, what was diagnosis:_____

Diagnosed by:_____

Where?_____

Instructions: You are being asked to fill out this questionnaire concerning your child in order to provide research information which will be helpful in learning more about the causes and types of behavior disturbances in children. Please pick the one answer you think is most accurate for each question. If you want to comment or add something about a question, add it right next to the question, if there is room. Or circle the number of the question, copy the number on the back of the questionnaire and write your comment there. Your additional comments are welcome, but even if you do add comments, please mark the printed question as well as you can. Remember, pick just one answer, and mark it with an "X," for each question.

It would be helpful if, on a separate sheet, you would write in any information about the child and his sisters or brothers which you think may be significant. (For example: Twins, living or dead; Behavior problems; IQ scores, if known.)

USE AN "X" TO MARK ONE ANSWER FOR EACH QUESTION. DO NOT SKIP MAIN QUESTIONS. SUB-QUESTIONS (NOT ALONG LEFT MARGIN) MAY BE SKIPPED.

1. Present age of child:
   - ____1 Under 3 years old
   - ____2 Between 3 and 4 years old
   - ____3 Between 4 and 5 years old
   - ____4* Between 5 and 6 years old
   - ____5* Over 6 years old (Age:___years)

2. Indicate child's sex:
   - ____1 Boy
   - ____2 Girl

3. Child's birth order and number of mother's other children:
   - ____1 Child is an only child
   - ____2 Child is first born of ___ children
   - ____3 Child is last born of ___ children
   - ____4 Child is middle born; ___ children are older and ___ are younger than this child
   - ____5 Foster child, or don't know

4. Were pregnancy and delivery normal?
   - ____1 Pregnancy and delivery both normal
   - ____2 Problems during both pregnancy and delivery
   - ____3 Pregnancy troubled, routine delivery
   - ____4 Pregnancy untroubled; problems during delivery
   - ____5 Don't know

5. Was the birth premature (birth weight under 5 lbs)?
   - ____1 Yes (about ___ weeks early; ___ lbs)
   - ____2 No
   - ____3 Don't know

6. Was the child given oxygen *in the first week?*
   - ____1 Yes
   - ____2 No
   - ____3 Don't know

7. Appearance of child during first few weeks after birth:
   - ____1 Pale, delicate looking
   - ____2 Unusually healthy looking
   - ____3 Average, don't know, or other

8. Unusual conditions of birth and infancy (check only one number in left-hand column):
   - ____1 Unusual conditions (Indicate which: blindness___, cerebral palsy___, birth injury___, seizures___, blue baby___, very high fever___, jaundice___, other_____
   - ____2 Twin birth (identical___, fraternal___)
   - ____3 Both 1 and 2
   - ____4 Normal, or don't know

9. Concerning baby's health in first 3 months:
   - ____1 Excellent health, no problems
   - ____2 Respiration (frequent infections___, other_____)
   - ____3 Skin (rashes___, infection___, allergy___, other_____)
   - ____4 Feeding (learning to suck___, colic___, vomiting___, other ___)
   - ____5 Elimination (diarrhea___, constipation___, other_____)
   - ____6 Several of above (indicate which: 2___, 3___, 4___, 5___, 6___)

10. Has the child been given an electroencephalogram (EEG)?
    - ____1 Yes, it was considered normal
    - ____2 Yes, it was considered borderline
    - ____3 Yes, it was considered abnormal
    - ____4 No, or don't know, or don't know results

11. In the first year, did the child react to bright lights, bright colors, unusual sounds, etc.?
    - ____1 Unusually strong reaction (pleasure___, dislike___)
    - ____2 Unusually unresponsive
    - ____3 Average, or don't know

12. Did the child behave normally for a time before his abnormal be-behavior began?
    - ____1 Never was a period of normal behavior
    - ____2 Normal during first 6 months
    - ____3 Normal during first year
    - ____4 Normal during first 1½ years
    - ____5 Normal during first 2 years
    - ____6 Normal during first 3 years
    - ____7 Normal during first 4-5 years

13. (Age 4-8 months) Did the child reach out or prepare himself to be picked up when mother approached him?
    - ____1 Yes, or I believe so
    - ____2 No, I don't think he did
    - ____3 No, definitely not
    - ____4 Don't know

14. Did the child rock in his crib as a baby?
    - ____1 Yes, quite a lot
    - ____2 Yes, sometimes
    - ____3 No, or very little
    - ____4 Don't know

15. At what age did the child learn to walk alone?
    - ____1 8-12 months
    - ____2 13-15 months
    - ____3 16-18 months
    - ____4 19-24 months
    - ____5 25-36 months
    - ____6 37 months or later, or does not walk alone

16. Which describes the change from crawling to walking?
    - ____1 Normal change from crawling to walking
    - ____2 Little or no crawling, gradual start of walking
    - ____3 Little or no crawling, sudden start of walking
    - ____4 Prolonged crawling, sudden start of walking
    - ____5 Prolonged crawling, gradual start of walking
    - ____6 Other, or don't know

* Note: This Check List is designed primarily for children 3 to 5 years old. If child is over 5, answer as well as you can by recall of the child's behavior.

17. During the child's first year, did he seem to be unusually intelligent?
    ____1 Suspected high intelligence
    ____2 Suspected average intelligence
    ____3 Child looked somewhat dull

18. During the child's first 2 years, did he like to be held?
    ____1 Liked being picked up; enjoyed being held
    ____2 Limp and passive on being held
    ____3 You could pick child up and hold it only when and how it preferred
    ____4 Notably stiff and awkward to hold
    ____5 Don't know

19. Before age 3, did the child ever imitate another person?
    ____1 Yes, waved bye-bye
    ____2 Yes, played pat-a-cake
    ____3 Yes, other (_____)
    ____4 Two or more of above (which? 1___, 2___, 3___)
    ____5 No, or not sure

20. Before age 3, did the child have an unusually good memory?
    ____1 Remarkable memory for songs, rhymes, TV commercials, etc., in words
    ____2 Remarkable memory for songs, music (humming only)
    ____3 Remarkable memory for names, places, routes, etc.
    ____4 No evidence for remarkable memory
    ____5 Apparently rather poor memory
    ____6 Both 1 and 3
    ____7 Both 2 and 3

21. Did you ever suspect the child was very nearly deaf?
    ____1 Yes
    ____2 No

22. (Age 2-4) Is child "deaf" to some sounds but hears others?
    ____1 Yes, can be "deaf" to loud sounds, but hear low ones
    ____2 No, this is not true of him

23. (Age 2-4) Does child hold his hands in strange postures?
    ____1 Yes, sometimes or often
    ____2 No

24. (Age 2-4) Does child engage in rhythmic or rocking activity for very long periods of time (like on rocking-horse or chair, jump-chair, swing, etc.)?
    ____1 Yes, this is typical
    ____2 Seldom does this
    ____3 Not true of him

25. (Age 2-4) Does the child ever "look through" or "walk through" people, as though they weren't there?
    ____1 Yes, often
    ____2 Yes, I think so
    ____3 No, doesn't do this

26. (Age 2-5) Does child have any unusual cravings for things to eat or chew on?
    ____1 Yes, salt or salty foods
    ____2 Yes, often chews metal objects
    ____3 Yes, other (_____)
    ____4 Yes, more than 2 above (which?____ _____)
    ____5 No, or not sure

27. (Age 2-4) Does the child have certain eating oddities such as refusing to drink from a transparent container, eating only hot (or cold) food, eating only one or two foods, etc.?
    ____1 Yes, definitely
    ____2 No, or not to any marked degree
    ____3 Don't know

28. Would you describe your child around age 3 or 4 as often seeming "in a shell," or so distant and "lost in thought" that you couldn't reach him?
    ____1 Yes, this is a very accurate description
    ____2 Once in a while he might possibly be like that
    ____3 Not an accurate description

29. (Age 2-5) Is he cuddly?
    ____1 Definitely, likes to cling to adults
    ____2 Above average (likes to be held)
    ____3 No, rather stiff and awkward to hold
    ____4 Don't know

30. (Age 3-5) Does the child deliberately hit his own head?
    ____1 Never, or rarely
    ____2 Yes, usually by slapping it with his hand
    ____3 Yes, usually by banging it against someone else's legs or head
    ____4 Yes, usually by hitting walls, floor, furniture, etc.
    ____5 Several of above (which? 2___, 3___, 4___)

31. (Age 3-5) How well physically coordinated is the child (running, walking, balancing, climbing)?
    ____1 Unusually graceful
    ____2 About average
    ____3 Somewhat below average, or poor

32. (Age 3-5) Does the child sometimes whirl himself like a top?
    ____1 Yes, does this often
    ____2 Yes, sometimes
    ____3 Yes, if you start him out
    ____4 No, he shows no tendency to whirl

33. (Age 3-5) How skillful is the child in doing fine work with his fingers or playing with small objects?
    ____1 Exceptionally skillful
    ____2 Average for age
    ____3 A little awkward, or very awkward
    ____4 Don't know

34. (Age 3-5) Does the child like to spin things like jar lids, coins, or coasters?
    ____1 Yes, often and for rather long periods
    ____2 Very seldom, or never

35. (Age 3-5) Does child show an *unusual* degree of skill (much better than normal child his age) at any of following:
    ____1 Assembling jig saw or similar puzzles
    ____2 Arithmetic computation
    ____3 Can tell day of week a certain date will fall on
    ____4 Perfect musical pitch
    ____5 Throwing and/or catching a ball
    ____6 Other (_____)
    ____7 More than one of above (which?_____)
    ____8 No unusual skill, or not sure

36. (Age 3-5) Does the child sometimes jump up and down gleefully when pleased?
    ____1 Yes, this is typical
    ____2 No or rarely

37. (Age 3-5) Does child sometimes line things up in precise, evenly-spaced rows and insist they not be disturbed?
    ____1 No
    ____2 Yes
    ____3 Not sure

38. (Age 3-5) Does the child refuse to use his hands for an extended period of time?
    ____1 Yes
    ____2 No

39. Was there a time before age 5 when the child *strongly* insisted on listening to music on records?
    ____1 Yes, insisted on only certain records
    ____2 Yes, but almost any record would do
    ____3 Liked to listen, but didn't *demand* to
    ____4 No special interest in records

40. (Age 3-5) How interested is the child in mechanical objects such as the stove or vacuum cleaner?
    ____1 Little or no interest
    ____2 Average interest
    ____3 Fascinated by certain mechanical things

41. (Age 3-5) How does child usually react to being interrupted at what he is doing?
    ____1 Rarely or never gets upset
    ____2 Sometimes gets mildly upset; rarely very upset
    ____3 Typically gets very upset

42. (Age 3-5) Will the child readily accept new articles of clothing (shoes, coats, etc.)?
    ____1 Usually resists new clothes
    ____2 Doesn't seem to mind, or enjoys them

43. (Age 3-5) Is child upset by certain things that are not "right" (like crack in wall, spot on rug, books leaning in bookcase, broken rung on chair, pipe held and not smoked)?
    ____1 Not especially
    ____2 Yes, such things often upset him greatly
    ____3 Not sure

44. (Age 3-5) Does child adopt complicated "rituals" which make him very upset if not followed (like putting many dolls to bed in a certain order, taking exactly the same route between two places, dressing according to a precise pattern, or insisting that only certain words be used in a given situation)?
    ____1 Yes, definitely
    ____2 Not sure
    ____3 No

45. (Age 3-5) Does child get very upset if certain things he is used to are changed (like furniture or toy arrangement, or certain doors which must be left open or shut)?
    ____1 No
    ____2 Yes, definitely
    ____3 Slightly true

46. (Age 3-5) Is the child destructive?
    ____1 Yes, this is definitely a problem
    ____2 Not deliberately or severely destructive
    ____3 Not especially destructive

47. (Age 3-5) Is the child unusually physically pliable (can be led easily; melts into your arms)?
    ____1 Yes
    ____2 Seems normal in this way
    ____3 Definitely not pliable

48. (Age 3-5) Which single description, or combination of two descriptions, best characterizes the child?
    ____1 Hyperactive, constantly moving, changes quickly from one thing to another
    ____2 Watches television quietly for long periods
    ____3 Sits for long periods, staring into space or playing repetitively with objects, without apparent purpose
    ____4 Combination of 1 and 2
    ____5 Combination of 2 and 3
    ____6 Combination of 1 and 3

49. (Age 3-5) Does the child seem to want to be liked?
    ____1 Yes, unusually so
    ____2 Just normally so
    ____3 Indifferent to being liked; happiest when left alone

50. (Age 3-5) Is child sensitive and/or affectionate?
    ____1 Is sensitive to criticism and affectionate
    ____2 Is sensitive to criticism, *not* affectionate
    ____3 Not sensitive to criticism, is affectionate
    ____4 Not sensitive to criticism *nor* affectionate

51. (Age 3-5) Is it possible to direct child's attention to an object some distance away or out a window?
    ____1 Yes, no special problem
    ____2 He rarely sees things very far out of reach
    ____3 He examines things with fingers and mouth only

52. (Age 3-5) Do people consider the child especially attractive?
    ____1 Yes, very good-looking child
    ____2 No, just average
    ____3 Faulty in physical appearance

53. (Age 3-5) Does the child look up at people (meet their eyes) when they are talking to him?
    ____1 Never, or rarely
    ____2 Only with parents
    ____3 Usually does

54. (Age 3-5) Does the child take an adult by the wrist to use adult's hand (to open door, get cookies, turn on TV, etc.)?
    ____1 Yes, this is typical
    ____2 Perhaps, or rarely
    ____3 No

55. (Age 3-5) Which set of terms best describes the child?
    ____1 Confused, self concerned, perplexed, dependent, worried
    ____2 Aloof, indifferent, self-contented, remote

56. (Age 3 and 5) Is the child extremely fearful?
    ____1 Yes, of strangers or certain people
    ____2 Yes, of certain animals, noises or objects
    ____3 Yes, of 1 and 2 above
    ____4 Only normal fearfulness
    ____5 Seems unusually bold and free of fear
    ____6 Child ignores or is unaware of fearsome objects

57. (Age 3-5) Does he fall or get hurt in running or climbing?
    ____1 Tends toward falling or injury
    ____2 Average in this way
    ____3 Never, or almost never, exposes self to falling
    ____4 Surprisingly safe despite active climbing, swimming, etc.

58. (Age 3-5) Is there a problem in that the child hits, pinches, bites or otherwise injures *himself or others*?
    ____1 Yes, self only
    ____2 Yes, others only
    ____3 Yes, self and others
    ____4 No (not a problem)

59. At what age did the child say his first words (even if later stopped talking)?
    ____1 Has never used words
    ____2 8-12 months
    ____3 13-15 months
    ____4 16-24 months
    ____5 2 years-3 years
    ____6 3 years-4 years
    ____7 After 4 years old
    ____8 Don't know

59a. On lines below list child's first six words (as well as you can remember them)

_____ _____ _____
_____ _____ _____

60. (Before age 5) Did the child start to talk, then become silent again for a week or more?
    ____1 Yes, but later talked again (age stopped___, duration___)
    ____2 Yes, but never started again (age stopped___)
    ____3 No, continued to talk, or never began talking

61. (Before age 5) Did the child start to talk, then stop, and begin to whisper instead, for a week or more?
    ____1 Yes, but later talked again (age stopped___, duration___)
    ____2 Yes, still only whispers (age stopped talking___)
    ____3 Now doesn't even whisper (stopped talk___; stopped whisp___)
    ____4 No, continued to talk, or never began talking

62. (Age 1-5) How well could the child *pronounce* his first words when learning to speak, and how well could he pronounce difficult words between 3 and 5?
    ____1 Too little speech to tell, or other answer
    ____2 Average or below average pronunciation of first words ("wabbit," etc.), and also poor at 3 to 5
    ____3 Average or below on first words, unusually good at 3-5
    ____4 Unusually good on first words, average or below at 3-5
    ____5 Unusually good on first words, and also at 3-5

63. (Age 3-5) Is the child's vocabulary (the number of things he can name or point to accurately) greatly out of proportion to his ability to "communicate" (to answer questions or tell you something)?
   ____1 He can *point to* many objects I name, but doesn't speak or "communicate"
   ____2 He can correctly *name* many objects, but not "communicate"
   ____3 Ability to "communicate" is pretty good—about what you would expect from the number of words he knows
   ____4 Doesn't use or understand words

64. When the child spoke his first sentences, did he surprise you by using words he had not used individually before?
   ____1 Yes (Any examples? _____)
   ____2 No
   ____3 Not sure
   ____4 Too little speech to tell

65. How did child refer to *himself* on first learning to talk?
   ____1 "(*John*) fall down," or "*Baby* (or *Boy*) fall down."
   ____2 "*Me* fall down," or "*I* fall down"
   ____3 "(*He, Him, She,* or *Her*) fall down"
   ____4 "You fall down"
   ____5 Any combination of 1, 2, and/or 3
   ____6 Combination of 1 and 4
   ____7 No speech or too little speech as yet

66. (Age 3-5) Does child repeat phrases or sentences that he has heard in the past (maybe using a hollow, parrot-like voice), what is said having little or no relation to the situation?
   ____1 Yes, definitely, except voice not hollow or parrot-like
   ____2 Yes, definitely, including peculiar voice tone
   ____3 Not sure
   ____4 No
   ____5 Too little speech to tell

67. (Before age 5) Can the child answer a simple question like "What is your first name?" "Why did Mommy spank Billy?"
   ____1 Yes, can answer such questions adequately
   ____2 No, uses speech, but can't answer questions
   ____3 Too little speech to tell

68. (Before age 5) Can the child understand what you say to him, judging from his ability to follow instructions or answer you?
   ____1 Yes, understands very well
   ____2 Yes, understands fairly well
   ____3 Understands a little, if you repeat and repeat
   ____4 Very little or no understanding

69. (Before age 5) If the child talks, do you feel he understands what he is saying?
   ____1 Doesn't talk enough to tell
   ____2 No, he is just repeating what he has heard with hardly any understanding
   ____3 Not just repeating—he understands what he is saying, but not well
   ____4 No doubt that he understands what he is saying

70. (Before age 5) Has the child used the word "Yes"?
   ____1 Has used "Yes" fairly often and correctly
   ____2 Seldom has used "Yes," but has used it
   ____3 Has used sentences, but hasn't used word "Yes"
   ____4 Has used a number of other words or phrases, but hasn't used word "Yes"
   ____5 Has no speech, or too little speech to tell

71. (Age 3-5) Does the child typically say "Yes" by repeating the same question he has been asked? (Example: You ask "Shall we go for a walk, Honey?" and he indicates he does want to by saying "Shall we go for a walk, Honey?" or "Shall we go for a walk?")
   ____1 Yes, definitely, does not say "yes" directly
   ____2 No, would say "Yes" or "OK" or similar answer
   ____3 Not sure
   ____4 Too little speech to say

72. (Before age 5) Has the child asked for something by using the same sentence you would use when you offer it to him? (Example: The child wants milk, so he says: "Do you want some milk?" or "You want some milk")
   ____1 Yes, definitely (uses "You" instead of "I")
   ____2 No, would ask differently
   ____3 Not sure
   ____4 Not enough speech to tell

73. (Before age 5) Has the child used the word "I"?
   ____1 Has used "I" fairly often and correctly
   ____2 Seldom has used "I", but has used it correctly
   ____3 Has used sentences, but hasn't used the word "I"
   ____4 Has used a number of words or phrases, but hasn't used the word "I"
   ____5 Has used "I", but only where word "you" belonged
   ____6 Has no speech, or too little speech to tell

74. (Before age 5) How does the child usually say "No" or refuse something?
   ____1 He would just say "No"
   ____2 He would ignore you
   ____3 He would grunt and wave his arms
   ____4 He would use some rigid meaningful phrase (like "Don't want it!" or "No milk!", "No walk!")
   ____5 Would use phrase having only private meaning like "Daddy go in car"
   ____6 Other, or too little speech to tell

75. (Before age 5) Has the child used one word or idea as a substitute for another, for a prolonged time? (Example: always says "catsup" to mean "red", or uses "penny" for "drawer" after seeing pennies in a desk drawer)
   ____1 Yes, definitely
   ____2 No
   ____3 Not sure
   ____4 Too little speech to tell

76. Knowing what you do now, at what age do you think you could have first detected the child's abnormal behavior? That is, when did detectable abnormal behavior actually begin? (Under "A", indicate when you *might* have; under "B" when you *did*.

	A	B
____1	In first 3 months	____
____2	4-6 months	____
____3	7-12 months	____
____4	13-24 months	____
____5	2 years-3 years	____
____6	3 years-4 years	____
____7	After 4th year	____

Parents' highest educational level (77 for father, 78 for mother)

77.	78.	
		1 Did not graduate high school
		2 High school graduate
		3 Post high school tech. training
		4 Some college
		5 College graduate
		6 Some graduate work
		7 Graduate degree (_____)

79. Indicate the child's nearest blood relatives, including parents, who have been in a mental hospital or who were known to have been seriously mentally ill or retarded. Consider *parents, siblings, grandparents, uncles* and *aunts*.
   If none, check here ☐

	Relationship	*Diagnosis* (if known)					
____1	_____	Schizophrenia	____	Depressive	____	Other	____
____2	_____	"	____	"	____	"	____
____3	_____	"	____	"	____	"	____
____4	_____	"	____	"	____	"	____
____5	_____	"	____	"	____	"	____

FORM E2, PART 2

Please answer the following questions by writing "1" if Very True "2" if True and 3 if False on the line preceding the question. Except for the first two questions, which pertain to the child before age 2, answer "Very True" (1) or "True" (2) if the statement described the child any time before his 10th birthday. If the statement is not particularly true of the child before age 10, answer "False" (3). Remember: 1=Very True, 2=True, 3=False.

80. ___ Before age 2, arched back and bent head back, when held

81. ___ Before age 2, struggled against being held

82. ___ Abnormal craving for certain foods

83. ___ Eats unusually large amounts of food

84. ___ Covers ears at many sounds

85. ___ Only certain sounds seem painful to him

86. ___ Fails to blink at bright lights

87. ___ Skin color lighter or darker than others in family (which: lighter___ darker___)

88. ___ Prefers inanimate (nonliving) things

89. ___ Avoids people

90. ___ Insists on keeping certain object with him

91. ___ Always frightened or very anxious

92. ___ Inconsolable crying

93. ___ Notices changes or imperfections and tries to correct them

94. ___ Tidy (neat, avoids messy things)

95. ___ Has collected a particular thing (toy horses, bits of glass, etc.)

96. ___ After delay, repeats phrases he has heard

97. ___ After delay, repeats whole sentences he has heard

98. ___ Repeats questions or conversations he has heard, over and over, without variation.

99. ___ Gets "hooked" or fixated on one topic (like cars, maps, death)

100. ___ Examines surfaces with fingers

101. ___ Holds bizarre pose or posture

102. ___ Chews or swallows nonfood objects

103. ___ Dislikes being touched or held

104. ___ Intensely aware of odors

105. ___ Hides skill or knowledge, so you are surprised later on

106. ___ Seems not to feel pain

107. ___ Terrified at unusual happenings

108. ___ Learned words useless to himself

109. ___ Learned certain words, then stopped using them

Please use the rest of this sheet for supplying additional information that you think may be relevant to understanding the cause or diagnosis of the child's illness.

APPENDIX C

NEGATIVISM TEST

NEGATIVISM TEST

Description of Subtests

Subtest A: Verbal requests for verbal responses.

Level A1: Presentation of 15 verbal requests: "Say girl, and then say boy".

Level A2: Presentation of 15 verbal requests: "Say yes please, and then say no thanks".

Design: Voice intensity and intonation kept constant for all requests and no use of reinforcement. Responses to all requests must be initiated within 4.5 sec. after request. Elicitation of accompanying, non-requested behaviors does not change response type.

Examples of response types:

Level A1:

- Correct: Subject emits "girl boy".
- Reversal: Subject emits "boy girl".
- Incomplete: Subject emits "girl" or "boy".
- Substitution: Subject emits a non-requested verbal response, e.g. "no", laugh, whine, cry, etc.
- Refusal: Subject emits a motoric response or no response.

Level A2:

- Correct: Subject emits "yes please no thanks".

- Reversal: Subject emits "nc thanks yes please", "thank no yes please", etc.
- Incomplete: Subject emits "no thanks yes", "no thanks", "no no", etc.
- Substitution: Subject emits a non-requested verbal response, e.g. sings, hums, whistles, etc.
- Refusal: Subject emits a motor response or no response.

Subtest B: Verbal requests for motor responses.

Level B1: Presentation of 15 verbal requests: "Give me the block".

Level B2: Presentation of 15 verbal requests: "Give me the dog, and then give me the cat".

Design: Level B1:

Two, 2-1/2 x 2-1/2 x 1-1/4 inch, wooden blocks (one on the experimenter's side of the table and the other on the subject's) both placed in their respective positions before each request.

Level B2:

Two, 2-1/2 x 2-1/2 inch, color pictures (one of a dog and one of a cat) both placed in front of the subject before each request and systematically changed in position after each request.

Examples of response types:

Level B1:

- Correct: Subject gives the experimenter the block.

- Reversal: Subject takes the block from the experimenter.
- Incomplete: Subject places the block in the direction of the experimenter, but does not pass it beyond the midline of the table.
- Substitution: Subject emits a non-requested motor response; e.g. spins block, smells block, kicks, etc.
- Refusal: Subject emits a verbal response or no response.

Level B2:

- Correct: Subject gives the experimenter the picture of the dog and then the cat. In cases when both were given simultaneously, the top picture was considered given second.
- Reversal: Subject gives the experimenter the picture of the cat and then the dog.
- Incomplete: Subject gives the experimenter either picture individually.
- Substitution: Subject emits a non-requested motor response, e.g. flips cards over, throws cards, gets up from table, etc.
- Refusal: Subject emits a verbal response or no response.

Subtest C: Nonverbal (gestural) requests for motor responses.

Level C1: Presentation of 15 nonverbal requests: individual imitations of the experimenter removing a peg from

a box and placing it into a pegboard. Each response was preceded by a pointing cue from the experimenter.

Level C2: Presentation of 15 nonverbal requests: individual imitations of the experimenter clapping both hands together once and then hitting both hands simultaneously on the table once. Each response was preceded by a pointing cue from the experimenter.

Design: Level C1:

Two, 6 x 6 inch, plastic pegboards (one in front of the subject and the other in front of the experimenter) both with 15 pegs in place, and a box of 50 pegs.

Level C2:

Clapping and hitting force kept constant for all request models.

Examples of response types:

Level C1:

- Correct: Subject removes peg from box and places it in his pegboard.
- Reversal: Subject removes peg from either pegboard and places it in box.
- Incomplete: Subject removes peg from box, removes peg from the experimenter's pegboard and places it in his own, or removes peg from his own pegboard and then replaces it.
- Substitution: Subject emits a non-requested motor

response, e.g. removes peg from the experimenter's pegboard, flips pegboard over, throws pegs, etc.

- Refusal: Subject emits verbal response or no response.

Level C2:

- Correct: Subject claps hands together and then hits both hands simultaneously on table.
- Reversal: Subject hits both hands simultaneously on table and then claps hands together.
- Incomplete: Subject emits either behavior separately.
- Substitution: Subject emits a non-requested motor response, e.g. hits head, hits experimenter, rocks, etc.
- Refusal: Subject emits verbal response or no response.

APPENDIX D

INSTRUCTIONS TO JUDGES

INSTRUCTIONS TO JUDGES

The instructions to the judges were:

You are going to see the videotapes of 27 children. Each child will be requested to perform six different tasks 15 consecutive times. I want you to carefully observe and determine which type of response they emit to each request according to the following criteria.

All requested tasks involve the child to emit two, properly sequenced behaviors.

Correct Responses will contain all of the requested behaviors in the proper sequence initiated within 4.5 sec. after the request. A response will be considered correct if it has the requested behaviors even if there are accompanying, non-requested behaviors emitted during the time interval. Correct responses are to be scored by means of a capital C.

Reversal Responses will contain all of the requested behaviors but in a backward or reverse sequence initiated within 4.5 sec. after the request. As with the correct responses, a reversal response may be accompanied by non-requested behaviors emitted during the time interval. Reversal responses are to be scored by means of a capital R.

Incomplete Responses will contain one of the requested behaviors initiated within 4.5 sec. after the request. Either

of the requested behaviors required for each task will be accepted. As with the correct and reversed responses, an incomplete response may be accompanied by non-requested behaviors emitted during the time interval. Incomplete responses are to be scored by means of a capital I.

Substitutive Responses will contain none of the requested behaviors, but will contain a response feature which is similar to the request. That is, if the child is requested to perform a verbal task (e.g. "Say girl, and then say boy", or "Say yes please, and then say no thanks"), a substitutive response will be any other verbal responses emitted to the request other than the one requested. Similarly, if the child is requested to perform a motor task (e.g. "Give me the dog, and then give me the cat" or "Give me the block"), a substitutive response will be any other motor responses emitted to the request other than the one requested. In general, if the task is verbal and the response is verbal but incorrect, or if the task is motoric and the response is motoric but incorrect, the response is substitutive. Substitutive responses are to be scored by a capital S.

Refusal Responses will contain none of the requested behaviors and will be of two types. The first type will be no response at all. The second type will be the opposite of the substitutive responses. That is, if the task is verbal the response is incorrect and motor, or if the task is motor and the response is incorrect and verbal, the response is refused.

Refusal responses are to be scored by means of a capital X.

You are going to be given a scoring sheet for each child and before starting you will be told the order of subtest presentation. Please place your appropriate judgment marks (C, R, I, S, X) under the appropriate subtest heading and beside the appropriate response number.

The light placed on top of the television monitor will signal termination of the time interval allowed for response initiation. No response begun by the child after the light flashes is to be considered part of the response for that particular request. At times the child will emit a response and a new request will be made before the 4.5 sec. time interval has elapsed. In these cases, the light will flash immediately after the child's response and the time interval will be reset for the next request.

If you are in any doubt as to which type of response is emitted, inform me immediately and that subtest will be replayed. If after the replay you are still in doubt, check the most likely response. You are required to judge every response.

Please do not consult with one another while making your judgments.

Do you have any questions?

APPENDIX E

JUDGES' RESPONSE RATINGS

JUDGES' RESPONSE RATINGS

Modal rating of the three judges for correct, reversed, incomplete, substitutive, and refusal responses for the autistic, behavior-disturbed and normal groups to the 15 requests for the six tasks.

Subject	Response Types	Subtests A1	A2	B1	B2	C1	C2
Autistic							
1	Correct	2	2	15	7	4	0
	Reversal	0	0	0	8	8	0
	Incomplete	0	0	0	0	0	15
	Substitutive	4	2	0	0	3	0
	Refusal	9	11	0	0	0	0
2	Correct	0	0	8	8	1	0
	Reversal	0	0	6	5	0	0
	Incomplete	2	0	0	0	14	2
	Substitutive	0	0	0	2	0	5
	Refusal	13	15	1	0	0	8
3	Correct	1*	6	14	8	15	14
	Reversal	0	0	0	3	0	0
	Incomplete	6	5	0	3	0	1
	Substitutive	8	2	1	0	0	0
	Refusal	0	2	0	1	0	0
4	Correct	0	0	11	15*	5	9
	Reversal	0	0	1	0	9	6
	Incomplete	0	0	0	0	0	0
	Substitutive	15	11	0	0	0	0
	Refusal	0	4	3	0	1	0
5	Correct	11	12	15	10	12	15
	Reversal	0	0	0	4	0	0
	Incomplete	0	1	0	1	1	0
	Substitutive	3	1	0	0	1	0
	Refusal	1	1	0	0	1	0

* Total disagreement of judges on one response; response was classified as correct.

Subject	Response Types	Subtests A1	A2	B1	B2	C1	C2
Autistic (contd.)							
6	Correct	0	0	8	8	9	7*
	Reversal	0	0	0	2	0	0
	Incomplete	8	14	0	0	1	2
	Substitutive	2	0	0	3	1	0
	Refusal	5	1	7	2	4	6
7	Correct	1	1	14	10	15	13
	Reversal	0	0	1	5	0	0
	Incomplete	14	13	0	0	0	1
	Substitutive	0	0	0	0	0	0
	Refusal	0	1	0	0	0	1
8	Correct	13	9	15	7	13	15
	Reversal	0	0	0	7	0	0
	Incomplete	0	5	0	0	0	0
	Substitutive	2	1	0	0	0	0
	Refusal	0	0	0	1	2	0
9	Correct	0	0	15	15	5	9
	Reversal	0	0	0	0	9	6
	Incomplete	15	15	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	1	0
Totals	Correct	28	30	115	88	89	84
	Reversal	0	0	8	34	17	9
	Incomplete	45	53	0	4	16	22
	Substitutive	34	17	1	5	5	5
	Refusal	28	35	11	4	8	15

Subject	Response Types	Subtests A1	A2	B1	B2	C1	C2
Behavior-Disturbed							
1	Correct	15	14	15	8	14	15
	Reversal	0	0	0	7	0	0
	Incomplete	0	1	0	0	0	0
	Substitutive	0	0	0	0	1	0
	Refusal	0	0	0	0	0	0
2	Correct	8	12	15	14	14	7
	Reversal	0	0	0	0	0	4
	Incomplete	5	1	0	0	0	1
	Substitutive	1	2	0	0	0	2
	Refusal	1	0	0	1	1	1
3	Correct	7	0	8	3	13	8
	Reversal	3	0	0	5	0	0
	Incomplete	2	13	0	0	2	1
	Substitutive	3	2	4	5	0	0
	Refusal	0	0	3	2	0	6
4	Correct	11	6	13	9	14	10
	Reversal	0	4	2	5	0	0
	Incomplete	0	1	0	0	0	0
	Substitutive	4	4	0	1	1	5
	Refusal	0	0	0	0	0	0
5	Correct	15	14	14	15	15	15
	Reversal	0	1	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	1	0	0	0
	Refusal	0	0	0	0	0	0
6	Correct	0	0	15	7	15	13
	Reversal	0	0	0	8	0	0
	Incomplete	15	15	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	2

Subject	Response Types	Subtests A1	A2	B1	B2	C1	C2
Behavior-Disturbed (contd.)							
7	Correct	15	15	15	15	15	12
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	3
8	Correct	0	0	14	0	0	4
	Reversal	0	0	0	0	0	0
	Incomplete	15	15	0	14	0	9
	Substitutive	0	0	0	1	14	2
	Refusal	0	0	1	0	1	0
9	Correct	15	15	15	15	14	4
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	1	11
Totals	Correct	86	76	124	86	114	88
	Reversal	3	5	2	25	0	4
	Incomplete	37	46	0	14	2	11
	Substitutive	8	8	5	7	15	9
	Refusal	1	0	4	3	4	23

Subject	Response Types	Subtests A1	A2	B1	B2	C1	C2
Normals							
1	Correct	15	15	15	15	15	15
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	0
2	Correct	15	15	15	15	15	15
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	0
3	Correct	15	15	15	15	15	15
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	0
4	Correct	15	15	15	15	15	15
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	0
5	Correct	15	15	15	15	15	15
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	0
6	Correct	15	15	15	15	15	15
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	0

Subject	Response Types	Subtests A1	A2	B1	B2	C1	C2
Normals (contd.)							
7	Correct	15	15	15	15	15	15
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	0
8	Correct	15	15	15	15	15	15
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	0
9	Correct	15	15	15	15	15	15
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	0
Totals	Correct	135	135	135	135	135	135
	Reversal	0	0	0	0	0	0
	Incomplete	0	0	0	0	0	0
	Substitutive	0	0	0	0	0	0
	Refusal	0	0	0	0	0	0