Observations on the Nature of Human Relatedness[1]

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The concept of human relatedness was reexamined in the context of a standardized evaluation of 55 boys and 13 girls referred with a diagnosis of childhood psychosis. Human relatedness was hypothesized to be a multidimensional complex construct which could be analyzed in terms of simpler, more basic functions. All children were evaluated on a 14-point diagnostic scale. Analysis of diagnostic data generated three factors, one of which comprised a cluster of variables representing a measure of human relatedness and various perceptual functions. The hypothesis was supported by factor loadings. Also, a multiple regression analysis indicated that most of the variance in human relatedness could be accounted for by perceptual variables. It is suggested that impairment of human relatedness is largely due to impaired perceptual functions, and that much inappropriate maternal behavior is in response to such functions.

The importance of a human infant's ability to relate to other humans has long been recognized. It is necessary for maintaining the infant's survival care, learning language, and specific patterns of socialization.

Considerable knowledge has been generated from animal studies into an analog of human relatedness. Mutual attachment in many of the lower species enables the young to develop quite specific following behavior through imprinting. The extent to which imprinting is a function of learning or that of relatively unpracticed instinctual responses is still controversial (Slukin, 1967).

The survival value of attachment between infant and mother is clear in both human and lower animal species. Although some biological propensity for attachment by the infant is generally accepted (Bowlby, 1969), many investigators, including Bettelheim (1967) and Lovaas as well (Lovaas, Freitag, Kender, Rabenstein, Schaefer, & Simmons, 1966), have emphasized the maternal or environmental side of the interaction in establishing and maintaining the development of human relatedness. They have interpreted the child's failure to relate adequately as a failure of his environment. Interference with early parent-child relations such as the effects of inappropriate parental feelings, attitudes, actions, and childhood trauma forms the main explanations within Freudian psychology for neurotic and other adjustment problems of adults. In the area of severe childhood disturbances, Mahler (1970) placed great emphasis on disturbances in mothering relationships in the formation of symbiotic psychosis. The concern with the effects of mother-child relations in the field of mental health could be expanded indefinitely. Fringe therapy-like groups also aspire to improve human relations by reveling in direct physical contact. It would not be surprising if clinicians of all theoretical orientations could agree on giving high priority to improving human relatedness. They would also tend to agree that deficiencies in relating are due to deficient learning experiences, and that each of several modes of therapeutic intervention has demonstrated its capacity for improving human relationships. Kanner (1943) identified lack of human relatedness as one of the two cardinal signs of infantile autism, and the British Working Party (Creak, 1964), considering severely disturbed children with many different diagnostic labels, also found impaired human relatedness to be one of the important characteristics of this broad group of children.

The difficulties involved in direct measurement of failure in human relatedness have generated vague formulations and unreliable diagnoses. In addition, remedial intervention is superficial at this complex level of conceptualization. This direction tends to lead to loose definitions of therapeutic endeavors suggesting warmth, love and understanding, and the demand to control unconscious processes involving rejection and ambivalence. The consequences of these confused therapeutic prescriptions for parents, who frequently become the scapegoats, have been elaborated elsewhere (Schopler, 1969).

PROGRAM

The Child Research Project is an outpatient program for the study and education of young autistic or psychotic children. Special emphasis is placed on

Table 1

Diagnostic Rating Scale for Psychotic Children

No.	Item	1 Age appropriate	2 Mild deviation	3 Moderate deviation	4 Severe deviation
1	Relationship to people	Appropriate responsiveness to examiner; eye contact, communicates	Partial avoidance	Relating tenuous, must be initiated by examiner	Pervasive detachment or avoidance
2	Imitation: verbal and motor	Readily imitates adult on verbal or motoric tasks	Partial or delayed imitation	Very little imitation	No verbal or motor imitation
3	Affect	Appropriate pleasure, displeasure, interest, etc.	Some signs of deviant affect: inhibition, lack of responsiveness, some silliness	Excessive or minimal indications of pleasure, displeasure, or interest	No evidence of pleasure, displeasure, or grossly inappropriate
4	Body awareness	Appropriate use of body and movements	Minimal peculiarities such as stereotyped movements, lack of coordination	Moderate peculiarities: posturing, rocking, self-directed aggression	Extreme or pervasive peculiarities: stereotypy, lack of coordination, posturing, rocking, self-directed aggression
5	Relation to non-human objects	Appropriate use and interest in objects	Some preoccupation with objects, also like a younger child	Peculiar and obvious preoccupation with objects or significant lack of interest in objects	Extreme preoccupation or repetitive use of objects or pervasive absence of interest in objects
6	Adaptation to environmental change	Appropriate response to change in activities	Some resistance to changes in activity, persistence in the same response pattern	Active resistance to change, signs of irritability, frustration, avoidance, difficult to distract	Severe avoidance, negative reactions to change, extreme resistance
7	Visual responsiveness	Appropriate use and interest in visual cues (not ability to see)	Some lack of attention to visual stimuli, does not make use of visual cues	Moderate visual inattention, generally avoids eye contact	Pervasive visual avoidance of people and objects
8	Auditory responsiveness	Appropriate responsiveness to auditory cues	Some lack of responsiveness to sounds and speech, may also be delayed responsiveness	Moderate unresponsiveness to auditory cues or moderate hypersensitivity	Pervasive auditory avoidance or extreme hypersensitivity
9	Near receptor responsiveness	Appropriate response to pain, normal tactual exploration	Mild preoccupation with tactual exploration, some lack of appropriate response to pain or touch	Moderate preoccupation with tactual exploration or smelling, moderate unresponsiveness to pain or touch	Excessive preoccupation with tactual exploration, smelling, severe or lack of response to pain
10	Anxiety reaction	No excessive crying, screaming, giggling, or withdrawal	Some anxiety in specific situations	Prolonged anxiety in many situations	Prolonged anxiety pervasively present
11	Verbal communication	Appropriate speech	Speech retarded some echolalia, slight peculiarity	Speech absent or somewhat peculiar, much echolalia, perseveration on ideas	Speech very peculiar and bizarre, jargon, complete absence of intelligible words
12	Non-verbal communication	Appropriate communication (gestures, facial expressions)	Communication mildly retarded	Communication absent, inappropriate, non-meaningful	Communication severely peculiar and bizarre
13	Activity level	Motility of child is average	Mildly hypoactive or hyperactive	Moderately hypoactive or hyperactive	Severely hypoactive or hyperactive
14	Intellecutal functioning	No evidence of retardation	Retardation across the board	Retardation with hints of potential	Retardation with obvious discrepencies

training parents to act as developmental agents for their own children, carrying out a treatment program at home in addition to weekly treatment sessions with Project staff. The treatment program aims at reducing and removing the child's psychotic behavior and helping him to develop adequate learning skills in order to attend school and live at home in the community. The experience of the program and theoretical formulations on which it is based are described in detail elsewhere (Schopler & Reichler, 1971, a, b, c).

While some referrals are made directly by concerned families, most children are sent by private physicians, mental health clinics, or developmental evaluation clinics after a tentative diagnosis of childhood psychosis is made; previous evaluations are reviewed. Each child is seen by one of our program staff members in a standardized diagnostic session. A set of standard tasks and structured interactions is presented to the child and a period of unstructured "free time" allowed for observation.

Ratings are made on 14 diagnostic scales based primarily on consensual diagnostic criteria for autism or childhood psychosis as reported by the British Working Party (Creak, 1964). The 14 variables rated by trained observers are listed in Table 1.

Our experience in this program prompted us to hypothesize that human relatedness is a complex interaction of a number of simpler, more basic functions and amenable to analysis in terms of more modal and directly observable activities.

SUBJECTS

Ratings were collected independently by paired trained observers on 68 children referred to our program for diagnostic evaluation during a 3-year period. Because diagnostic criteria used by referral sources varied considerably, the diagnosis of psychosis was not always confirmed. The final diagnosis, which followed an evaluation by our staff, and other identifying characteristics of the subjects are detailed in Table 2.

Although all data were collected in a program for psychotic children, the patient population was by no means homogeneous. Only 33.8% of the children were diagnosed as clinically psychotic. A group of 29.4% was designated as having a mild to moderate degree of psychotic disorganization, and 36.7% were identified as non-psychotic. Males (80.8%) were overrepresented, an occurrence typical of almost every clinical child population. Racial representation appeared to reasonably approximate normal population ratios, and social classes were comparably proportionate. The age of subjects ranged from 1 year and 3 months to 9 years and 5 months, with a concentration in the 4- to 7-year-old group.

Table 2

Identifying Characteristics and Diagnosis of 68 Patients

Identifying characteristic	Diagnosis			Total	
	Non-psychotic	Mild to moderate psychosis	Moderate to severe psychosis	N	Percentage
Age (years)					
1-2	1	—	1	2	3
2-3	4	3	1	8	12
3-4	1	—	6	7	10
4-5	4	6	6	16	23
5-6	5	5	3	13	19
6-7	8	3	3	14	21
over 7	2	3	3	8	12
Sex					
Male	20	14	21	55	81
Female	5	6	2	13	19
Race					
Black	5	7	5	17	25
White	20	13	18	51	75
*Social Class**					
I	5	3	4	12	18
II	7	5	4	16	24
III	5	5	6	16	24
IV	5	5	5	15	22
V	3	2	3	8	12
Total sample					
N	25	20	23	68	100
Percent	37	29	34		100

*Social class, based on Hollingshead (1965) represents a two-factor (occupation and education) index of social position; the class of one patient was unassignable.

There was no severe skewing on any of these parameters, however, and the subjects can be considered fairly representative of a developmentally disordered group of children between the ages of 2 to 8.

METHODS

Procedure

Each child was rated independently by two observers on the 14 variables comprising our scale. Each variable was treated as a continuum and the ratings of

1 to 4 as equal intervals. The scale was constructed so that a rating of 1 denoted normal; 2, mildly deviant; 3, moderately deviant; and 4, severely deviant. Due to staff turnover during the period of data collection, five observers have been combined into three pairs; inter-rater agreement was calculated for each variable as shown in Table 3. Percentage agreement was indicated for identical ratings and for those within one point. For purposes of analysis, the ratings of both observers for each variable on each child were summed to obtain the best approximation to the actual behavior. Such procedure facilitated the analysis.

Table 3

Inter-rater Percentage Agreement on Variables in the Rating Scale
for Psychotic Children

Raters	R and J		E and S		E and L	
Subjects	$n = 20$		$n = 21$		$n = 23$	
Agreement criteria / Variable	Identical	Within one	Identical	Within one	Identical	Within one
1	80	100	67	100	83	100
2	75	100	71	100	78	96
3	50	100	38	100	52	100
4	65	100	76	100	65	100
5	80	100	76	100	61	100
6	60	95	38	95	48	96
7	75	95	57	100	61	100
8	75	100	76	100	61	100
9	75	100	43	100	87	96
10	45	90	76	100	65	100
11	95	100	95	100	74	87
12	80	95	67	91	74	100
13	65	100	48	100	57	100
14	55	95	71	91	61	96
Mean	70	98	64	98	66	98
Range	45-95	90-100	38-95	91-100	48-87	87-100

For example, if both observers agreed on a rating of 2 pertaining to a particular variable for a child, the datum for analysis was 4 (2 + 2). If the first rater designated a 2 and the second a 3, the rating for analysis was 5. In effect, ratings on variables ranged from 2 to 8.

Factoring and Data Processing

A factor analysis was performed on the 14 variables for our 68 cases to examine the relationships among these variables. Factoring was chosen as the best analytic method of searching for clusters of variables which may have a relationship that is not clearly apparent on an a priori basis.[3] Due to technical disagreements among factor analysts who prefer the principal components analysis or what Nunnally (1967) refers to as hypothetical factors, we also performed an analysis with communalities other than 1. Data processing was done by an IBM 360-165 Computer using the Biomedical Sciences Program BMDO3M. The results were essentially identical for both methods. The factor matrix is shown in Table 4.

Table 4
Factor Matrix of Diagnostic Variables

Variable		Factor		
No.	Item	I	II	III
1	Relationship to people	*.809*	.037	.287
2	Verbal and motor imitation	*.764*	.080	.337
3	Affect	*.684*	.020	.540
4	Body awareness	*.824*	.200	.110
5	Relation to non-human objects	*.777*	.062	.079
6	Adaptation to environmental change	.423	.206	.536
7	Visual responsiveness	*.743*	.263	.159
8	Auditory responsiveness	*.754*	.259	.141
9	Near receptor responsiveness	*.774*	.195	−.155
10	Anxiety reaction	−.023	−.034	*.901*
11	Verbal communication	.417	.610	.105
12	Non-verbal communication	.584	.405	.362
13	Activity level	.325	.211	.345
14	Intellectual functioning	.014	*.914*	.015

Note.—Factor I denotes relating. Loadings of .700 or above are in italics to indicate strongly significant relationships to a factor. Cumulative variance = 66.2%.

[3]Factor analysis is a mathematical aid for discovering a common factor (or function) which may be measured or affected by several apparently independent variables (Nunnally, 1967). It enables one to compress a larger number of variables into a smaller number of primary factors. The specific analysis performed is sometimes referred to as a principal components analysis.

RESULTS

Three factors were generated accounting for 66.2% of the variance in the 14 variable system. In Table 4, the values for a variable under each factor indicate the factor loadings. They measure the degree of relationship of a variable to the factor. Of special interest in this report is Factor 1. The degree of a variable's relation to a factor is assessed both by its correlation with the factor and its relative lack of correlation to other factors. For Factor 1, measures of relationship with people, imitation, body awareness, relation to non-human objects, and visual, auditory, and near-receptor responsiveness are strongly related. These variables, in common, assess the child's ability to relate at various levels of complexity to his environment. We have therefore assigned to Factor 1 the label "Relating."

The second factor is primarily related to assessment of intelligence and, not surprisingly, verbal communication. The third factor is highly related to measured anxiety and also related to assessment of adaptation to change. Some variables have loadings across factors. Non-verbal communication loads on all factors, but has a slightly higher loading on Factor 1. Activity level has a small loading on all factors. While variable 6 (adaptability to change) has its highest loading on Factor 3, it also loads appreciably on "Relating."

Since the factor analysis was performed on the entire system of 14 variables, the variance and correlations of all variables influence the loadings of the principal ones on Factor 1. The question was therefore raised to what extent the clustering of those primarily loading on Factor 1 was independent of the remaining variables. We were primarily concerned with the degree to which measures of human relatedness, our Variable 1, could be predicted by variables which cluster with it on Factor 1 (Variables 2, 4, 5, 7, 8, and 9). To assess this relationship, a multiple regression analysis was performed using the variables loading on Factor 1, with V1 as the dependent, as shown in Table 5.

Table 5 shows that 64% of the variance in Variable 1 can be predicted or accounted for by measures of other Factor 1 variables.

DISCUSSION

The results show a clustering (Factor 1) of variables concerning human relatedness and perceptual functions at various levels of complexity. These include near-receptor, auditory, and visual responses to the most simple stimuli at the lowest levels of development. At some greater levels of complexity imitation, body awareness, and relation to non-human objects also correlate with relatedness. At the highest and most complex level of development, human

Table 5

Multiple Stepwise Regression of Factor 1
Variables on Variable 1

Variable		Multiple R	Cumulative R square*
No.	Item		
4	Body awareness	.683	.467
5	Relation to non-human objects	.754	.568
8	Auditory responsiveness	.784	.615
7	Visual responsiveness	.795	.632
9	Near receptor responsiveness	.801	.641
2	Imitation: verbal and motor	.801	.642

Note.—Variable 1 denotes relationship to people. *For the total 6-variable equation $F = 18.25$ $(df = 6.61)$, $p < .001$.

relatedness is also significantly present as part of the child's ability to relate to his environment. The results of our factor analysis must be interpreted with caution and used heuristically rather than being treated as causal relationships.

Perhaps the most parsimonious interpretation of the findings is that human relatedness is but one aspect of the organism's total ability to relate to his external environment. This would suggest that it has been a highly confounded construct. There appears to be no basis for interpreting human relatedness separately from other relatedness functions represented in Factor 1. The extent to which many clinicians have viewed impairments in human relatedness as impairments with primary causal effects on other perceptual functions is tenuous and questionable. It is rather more likely that impairments in the simpler perceptual systems will have serious effects on the development of human relatedness.

The results of the multiple regression analysis are consistent with this interpretation. They showed that the variables representing primary perceptual functions are highly correlated, and predict human relatedness. These predictive variables include those which enable a child to perceive and organize his surroundings, including other humans. Other research has shown that the very young infant during the first few months is not capable of this level of perceptual organization (Casler, 1961). The very young infant does not show stable awareness of the distinction between his mother and strangers (Shaffer & Emerson, 1964). In essence, the child does not show signs of attachment or relatedness independent of perceptual development.

On the other hand, the data from the factor analysis would suggest that intelligence has a considerably less significant effect on relating ability. Intelligence can become a limiting factor and severe intellectual impairment can interfere with the ability to relate. Of our two measures of intellectual functions, speech loaded highest on Factor 1. Speech would appear to be the major intellectual function which most affects human relationships. The effect of the speech variable, however, was less than that of perceptual variables, and speech itself is dependent on a relatively intact perceptual system.

The relationship between preference for near-receptor responses (Variable 9) and impairment of relatedness (Factor 1) is consistent with previous research (Goldfarb, 1956; Schopler, 1965). If auditory and visual receptors are dysfunctional, the child may focus attention on those minute aspects of the environment which are immediately accessible and manageable. In general, these near-receptor stimuli are also less complex than the auditory and distant visual environment. Such findings are consistent with those of Hutt and Hutt (1970) who reported that autistic children show a decided preference for the less complex environment. They found that both stereotypy and EEG desynchronization are more abundant in the complex than in the simpler environment. Furthermore, the Hutts suggested that gaze aversion, a primary behavior contributing to the clinical impression of unrelatedness in autistic children, is in fact an attempt to simplify the stimulus environment.

Ornitz and Ritvo (1968) have presented evidence indicating that among psychotic and autistic children the lack of perceptual constancy explains more of their peculiar behavior than any other characteristic including their "lack of relatedness." When the data from our study are viewed in the context of other current research, it may be concluded that a primary focus of attention on human relatedness as a unitary function is misdirected. More about the developmental dysfunction of childhood psychosis, including the inability to relate meaningfully to other humans, will likely be understood by more systematic investigation of perceptual processes, especially those involving the auditory and visual systems. Such emphasis on perceptual impairment is also consistent with the view that the impaired maternal response to psychotic children is primarily a reaction to biological disturbances in the child (Schopler & Reichler, 1971; Schopler & Loftin, 1969). This perspective does not deny environmental influence in the child's development of meaningful human relationships. It is clear from the results of the multiple regression analysis that not all of the variance in the measure of human relatedness can be accounted for by the perceptual functions represented in this study. Some of the unexplained variance of the human relatedness variable is undoubtedly due to environmental

influences. Prescott (1971), who reviewed early somatosensory deprivation, suggested that even the most potent environmental effects on the child occur at the perceptual level and not at the level of a construct as complex as human relatedness. This is consistent with our view that much of the disturbance in the environment is in response to impairment in the child. The environment, most particularly the maternal response, becomes less organized and less consistent in response to the instability in the child. Consequently, maternal behavior has an amplifying effect on the child's impairment.

BROADER IMPLICATIONS

The applicability of our findings to the development of human relatedness in non-psychotic children, especially normal ones, is not clear. However, since our data represent a population with a mixture of disturbances, they appear to have at least some significance for other mental disorders in childhood.

Broader implications readily follow from a recent case study of a primiparous 25-year-old mother and her 3½-month-old fraternal twins (Stern, 1971); it describes a disturbance of social contact between the mother and the second born twin.

> The fraternal twins, Mark the first born and Fred, were in separate infant seats facing the mother who played with them sitting on the floor. Both twins were calm and alert at the onset of the interaction. After 7 minutes, Fred was upset and his mother's efforts to soothe or distract him were unsuccessful—in fact, worsened the situation. Her intrusions with Mark, who remained calm, were fewer, shorter, and less intense. Unlike Mark, Fred could neither sustain a face-to-face position nor keep his face away from his mother for long. The average duration of Mark's face-to-face position was consistently longer, indicating that Fred did not discriminate as well as Mark.

Stern did not mention that the second born twin (in the author's words, "less discriminative of her behavior") exhibited characteristics that are consistent with minimal brain damage. Having described the mother's confusion due to the impaired twin's behavior, the author also noted that the child continued to have increasing problems in adapting to his environment at the age of 12 to 15 months.

> A more fearful and dependent child, he greets people with a fearful expression, refuses to make prolonged eye contact and regularly executes extreme face aversions in social situations.

Stern traced the pathological development to "controlling" maternal behavior and "overstimulation." His interpretations, however, are severely constrained and skewed by a priori clinical and theoretical bias. This probably prompted the author to ignore some of his own observations in favor of "clinical impressions," even though he did not rule out biological factors.

A better interpretation of Stern's observations can be suggested by concluding that minimal brain dysfunction impeded the infant's ability to organize his perceptual sphere well enough to adequately discriminate maternal behavior. This early biological interference with relatedness has led to continued maternal confusion and increasing disturbance in the child. Rather than overstimulation by a mother clearly trying to relate to her infant (Stern reported that the mother spent more time looking at and relating to the disturbed infant), the child needed a more structured, controlled and organized stimulation from the mother to facilitate more consistent and meaningful percepts (Schopler, Brehm, Kinsbourne, & Reichler, 1971).

Stern's case study is brought to the reader's attention because it represents a constellation of traditionally misplaced emphases.[4] Our current studies strongly suggest that research focused on perceptual discrimination and integration in the young child will facilitate an understanding of the early maternal-infant interaction and also the development of human relatedness. In addition, they support the view that remediation for many children with disturbed human relatedness should be based on perceptual-motor training and education. At the same time, parents should be guided in structuring the child's environment in a way that facilitates the development of consistent, organized, and meaningful perceptual discrimination and integration.

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[4]Steadily reported in the literature (Bettelheim, 1967), more or less, this approach has been critically reviewed by Rutter (1968) and Schopler (1969).

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