A BEHAVIORAL RATING SCALE FOR INSTITUTIONALIZED AMBULATORY, SEVERELY, AND PROFOUNDLY MENTALLY RETARDED CHILDREN

by

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ABSTRACT

The Behavioral Rating Scale for institutionalized ambulatory severely and profoundly mentally retarded children is introduced. The attendant is used as a rater, and rater training procedures are discussed. Three main aspects of the study include interrater reliability information, a validation comparing Behavioral Rating Scale scores with Vineland Social Maturity Social Age Quotients in three residential cottages, and a factor analysis in which the factors are identified and interpreted. The Scale attained adequate interrater reliability and discriminated significantly between criterion groups. Eleven factors were derived, three of which, a general ability factor, an aggression factor, and a social factor, accounted for the major portion of the variance. The author concludes that the Behavioral Rating Scale is a potentially fruitful and economical way of gaining important information about the resident. Use of the Scale as a screening and assessment device in conjunction with training programs is encouraged.

INTRODUCTION

In several institutions for the mentally retarded, training programs are being initiated and refined, and in conjunction with these programs, assessment devices are being developed. The development of the Behavioral Rating Scale was undertaken to help fill the need for such devices. The Scale could be used to select residents who would be appropriate for training, to point out areas of behavioral deficiency so that the trainer's time may be economically spent, and to reflect changes in the behavior of the child following training.

With these purposes in mind, the author decided to use the attendant who is familiar with the child as a rater. After the development of the Scale, which will be described shortly, a study evaluating the Scale and the effectiveness of the raters was in order. Data were needed to shed light on the reliability of the raters, the validity of the Scale in reference to another measure, and the information provided about the resident by the Scale.

The steps leading to the final categories of the Scale began with an extensive series of observations upon randomly selected residents during "random periods," from first waking to going to bed at night. Besides observations at random times, "critical periods" were selected when the resident was involved in routine or special activities, for example while brushing his teeth or attending a birthday party. A second observational base was collected in recorded open-ended interviews with the attendants. Such questions as "Who is the most intelligent, the least intelligent, and why?" were asked. This led to fruitful discussion of the concepts that the attendants use to structure the behavior of the children, and the behaviors specifying these concepts. An example of an interview on "independence" follows:

> Tommy is in his own world. Jimmy responds to affection, but some never come around. Joe could care less if you patted him. Leo doesn't like to be bothered. Sammy likes affection, but you have to get him in the mood. Upon play he will come over to you, likes you to put your arms around his neck. There are four who could care less. The others can be drawn to you somehow. You should be available to them at small times of the day.

Through these discussions, the terminology of the scale was brought into line with the words which the attendants use in describing and thinking about the children.

Through further observation and synthesis, the initial scales were constructed. At this point, ten raters each rated five children on the scale. One set of five raters rated five children, and another set of five rated another five that they were familiar with. The criterion of familiarity was one year of working with the resident on the ward.

The target ward for the initial observations included 50 severely and profoundly retarded ambulatory boys, ages 10-27, with tested Binet I.Q.'s below 30 and Vineland Social Maturity Scale Ages below five years.

Following the initial administration, Kendall Coefficients of Concordance were computed, distributions of categories used were examined, and the individual raters were interviewed to note misunderstandings and to clarify the terminology of the Scale. Observations were conducted on the girls' wards, and professional staff in the institution sorted the items, offering their suggestions. With reliability, clarity, and new dimensions in mind, the scales were rewritten and placed in final form for the study.[1]

The Behavioral Rating Scale in its present form (see Appendix I) consists of 26 five-point Likert items defined by the name of the item, in certain cases a description of the dimension measured by the item, and a descriptive statement specifying the behavior included at each point of the item. The Scale covers the areas of self-care skills, communication, aggressive behavior, and stereotyped behavior.

Essential to the use of the Scale are a set of rater training procedures which will be discussed in the methods section.

The present study set out to demonstrate the interrater reliability of the individual items of the Scale and the combined scores. It further attempted to show a rough discrimination between the higher and lower ability levels as they were grouped in the individual cottages, and finally to identify the factor characteristics of the Scale.

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1. A parallel research program is continuing under the direction of Dr. E. E. Balthazar at Wisconsin Central Colony and Training School, using further revisions of the Scale, with a changed format, and using a trained technician as rater.

METHODS

Subjects

The population included in the study consisted of 117 retarded children who lived in three cottages of a large, state-supported institution for the mentally retarded, the Arizona Children's Colony. This is a different population from that of Wisconsin Central Colony and Training School on which the Scale was developed. There are higher percentages of Negro children in the sample, and relatively high proportions of Mexican-American and American-Indian children. A more important difference is that one cottage, Cottage A, is at a level above the previous group in self-care skills and Vineland Quotients.

Cottage A consisted of 40 girls with a mean age of 14.92 years and an SD of 2.56. Mean Social Maturity Scale Social Age Quotient was 30.57 with an SD of 10.5. Cottage C was made up of 37 girls with a mean age of 13.15 years and an SD of 2.53. The mean Vineland Social Age Quotient was 16.44, with an SD of 6.69. The girls from Cottage A have more self-care skills, are more easily cared for, and some attend school at the Colony. Cottage B consisted of 39 boys, comparable in age and Vineland Social Age Quotients to the girls of Cottage C. Their mean age was 14.8 years with an SD of 3.50. Social Maturity Scale Age Quotients had a mean of 16.30 and an SD of 6.69.

Raters

The housemother and assistant-housemother are responsible for the care of the children in the cottages and are assisted by other staff. They have worked with the children for a minimum of one year and some as long as six years. Educational levels of the raters ranged from eighth grade to high school completion. These housemothers and assistant-housemothers each rated each of their children, so that each rater rated 37-40 children. The raters reported 15-30 minutes spent in rating each resident.

Procedure

The rater-training procedure, in the absence of an independent "practice" population, was combined with the assignment of the ratings per se. Total time spent with the raters was approximately five hours. First the Scale was explained and reviewed in detail, questions were answered, and a sheet extracted from Guilford (1954) on typical errors made by raters was discussed. At this point the raters each rated the same five children from their cottage. In the next meeting the previous ratings were discussed, and an attempt was made to bring them to agreement, urging them to state what the rating would have been if the ratings could have been repeated. Such meetings took place after each 5-10 ratings. The raters were continually urged to refrain from discussing the ratings among themselves. The combining of rater training and ratings led to greater agreement as further protocols were filled out.

Three main divisions of the statistical analysis concern the interrater reliability of the items and of the Scale, introductory validation data, and a description of the factors measured by the Scale.

For the reliability data, the Pearson product moment r was computed on each item for the two raters for each cottage separately. The three cottages were then combined, and the pooled Pearson r calculated for each item for two sets of raters, one in each set from each cottage. Finally, a total score was calculated for each child, weighting each item equally and consisting of the sum of the point values for each item.

The validation of the Behavioral Rating Scale against the Vineland Social Maturity Scale, consisted of t-test comparisons between the three cottages, A, B, and C, on both scales. The score representing the child on the Behavioral Rating Scale was the average total score assigned by the two raters. The low Behavioral Rating Scale score reflects a higher level of functioning. The purpose of the t-test was to determine how well each scale discriminated between the criterion groups. The Vineland Scales had been administered as much as four years previous to testing, and were somewhat inaccurate. The fact that the Vineland scores were used as a criterion for assignment to groups tends to balance the inaccuracy. If the high-and low-functioning groups, as established on the basis of the Vineland Social Maturity Scale scores can be discriminated by the Behavioral Rating Scale, to an equivalent degree and in identical directions, then a strong argument may be made for the experienced attendant as rater.

The third aspect of the study concerned the factor character of the Scale. For this purpose, the sum of the two ratings made upon the child was used. The factors were extracted using the Principal Axis Factor Extraction Method, and based upon the Guilford-Lacy criterion (Thompson, 1951), the decision was made to rotate 11 factors accounting for the major part of the variance. The factors were placed in the Varimax factor rotation program (Kaiser, 1959) and then defined.[2]

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2. Here two minor deviations in the Scale format should be noted. The first is that item 26, Length of Social Contacts, was numbered in an inverse direction from the other 25 items, so that the high-level point is 5 rather than 1. Appropriate corrections were made for this. This resulted in negative correlations in the factor analysis. The second deviation is that scales 8A and 8B were originally two scales. These scores were combined, or one was used if a rating was made on only one of them. (Instructions should emphasize a rating to be made on either 8A or 8B.)

RESULTS

The item interrater reliability data are included in Appendix II. Here, for each item, the Pearson Coefficient for each cottage is shown, as well as the combined reliabilities. Of interest are the levels attained by the raters from respective cottages and different items. The raters from Cottage A were most in agreement, the Cottage B raters were next, followed by the Cottage C raters. On two items the Cottage A raters dropped below .80. The combined reliabilities are lowered sharply by the Cottage C pair. The Cottage C raters attained a mean value of .44 with an SD of .23, while the Cottage A raters attained a mean value of .91 and an SD of .08. The Cottage B raters attained a mean of .78 and an SD of .13, while the equivalent combined values were .75 and an SD of .12. The total score reliability was .98 for Cottage A, .91 for Cottage B, and .84 for Cottage C (see Appendix II).

Items 7, 12, 13, 17, 24, and 26 had the lowest interrater scores with reliabilities below .69.

The results of the t-tests comparing the three cottages on the Behavioral Rating Scale and the Vineland Social Maturity Scale Social Age Quotients are presented in Tables 1 and 2, page 9. A comparison of these tables shows that for the Behavioral Rating Scale and the Vineland Social Maturity Scale, the differences are significant in the predicted directions. Recall that the high Vineland Social Maturity Scale score indicates a high level of functioning and the low Behavioral Rating

Table 1

Behavioral Rating Scale Total Score Comparisons of Cottages A, B, and C

	$\bar{X}$	N	SD	F[a]	t
Cottage B	75	37	15.25	1.26	5.11**
Cottage A	55.7	60	17.20		
Cottage B	75	37	15.25	1.40	.57
Cottage C	73.09	37	12.88		
Cottage A	55.7	40	17.20	1.78	5.02**
Cottage C	73.09	37	12.88		

[a]Significant F indicates heterogenity of variance.

**$p < .01$ with 1-tailed test.

Table 2

Vineland Social Maturity Scale Social Age Quotient Comparisons for Cottages A, B, and C

	$\bar{X}$	N	SD	F[a]	t
Cottage B	16.30	39	8.25	1.48	6.79**
Cottage A	30.57	40	10.05		
Cottage B	16.30	39	8.25	1.50	.07
Cottage C	16.44	29	6.69		
Cottage A	30.57	40	10.05	2.24*	6.92**
Cottage C	16.44	29	6.69		

[a]Significant F indicates heterogenity of variance.

*$p < .05$

**$p < .01$ with 1-tailed test.

Scale score indicates a high level. For both scales there are significant Cottage C (low level)-Cottage A (high level) differences, and Cottage B (low level)-Cottage A (high level) differences, while the Cottage B (low level)-Cottage C (low level) differences are not statistically significant. Coincidentally the rank orders across the three cottages of the means and SD's for the two scales are identical.

The final set of data to be reported is the factor character of the Scale; how the items clustered for this sample. The raw data for the factor analysis are presented in Appendix III, the matrix of the intercorrelations of the 26 scales, Appendix IV, the transformation matrix, and Appendix V, the matrix of factor loadings resulting from the Varimax Orthogonal Factor rotation. Since little further information was judged to be gleaned from oblique rotation, the matrix was left in orthogonal form. The resulting factors, as defined by the loadings of the individual items upon them, will be presented. Since a graphical representation will not be made, an attempt will be made to illustrate the relationships between the factors by the shared loadings of items on factors. If an item loads highly on two factors, then different qualities of the item are measured by the two factors. For each factor, the items loading on the factor are ordered according to the magnitude of the loading. On Factor I, for example, item 25, Attention to Personal Appearance, has a loading of .77, and item 25 also loads .31 on Factor III.

FACTOR I.

.92 item 14, Bladder Training
.89 item 8, Dressing Skills
.89 item 11, Bowel Training
.88 item 23, Feeding Skills

.77 item 25, Attention to Personal Appearance (III .31)
.76 item 1, Bathing
.66 item 4, Participation in Entertainment or Play Activity (III .43) (XI .19)
.63 item 15, Cooperativeness (XI .18) (III .36)
.58 item 5, Type of Contact with other residents (III .41) (XI .18)
.52 item 21, Complexity of Commands and Signals Followed (X .39) (III .48)
.45 item 18, Complexity of Expressive Speech (X .61)

FACTOR II.
.90 item 2, Frequency of Aggression
.90 item 19, Objects of Aggression
.78 item 3, Control of Tantrum Behavior
.51 item 10, Care of Property (V .24) (IX .30) (X .48)

FACTOR III.
.84 item 24, Response to Other-Initiated Contact
.80 item 20, Attention-Eliciting Behavior
-.62 item 26, Length of Social Contacts
.48 item 21, Complexity of Commands and Signals Followed (I .52) (X .39)
.43 item 4, Participation in Entertainment or Play Activity (I .66)
.41 item 5, Type of Contact with Other Residents (I .58)
.36 item 15, Cooperativeness (I .63)
.31 item 25, Attention to Personal Appearance (I .31)

FACTOR IV.
.80 item 9, Body Rocking
.77 item 16, Hand Movements

FACTOR V.
.88 item 7, Victimization
-.25 item 4, Participation in Entertainment or Play Activity (I .66)
-.32 item 5, Type of Contact with Other Residents (I .58)
-.36 item 18, Complexity of Expressive Speech (I .45)
.27 item 26, Length of Social Contacts (I -.27)

FACTOR VI.
-.91 item 22, Genital Play

FACTOR VII.
.81 item 12, Non-Social Vocalization (I .38)
.35 item 26, Length of Social Contacts (I -.27)

FACTOR VIII.
.84 item 6, Hyperactivity

FACTOR IX.
-.87 item 7, Hypoactivity

FACTOR X.
.61 item 18, Complexity of Expressive Speech (I .45)
.48 item 10, Care of Property (II .51)
.40 item 21, Complexity of Commands and Signals Followed (I .52) (III .48)

FACTOR XI.
.83 item 13, Elicitors of Temper or Upset Behavior

DISCUSSION

The results of the interrater reliability measures provide limited information on the Scale. Certain items are relatively unreliable, as are certain raters for unknown reasons, and this must be considered in examination of the individual case. When the scores are combined into a total score, reliability increases and reaches acceptable levels. The use of a combined score from these data, therefore, appears to be a reliable measure in terms of the raters. The degree of proficiency is accountable to the degree of specification built into the scale. Each point of an item is specified and provides a reference point. This quality, a self-explanatory one, allows for its use by an untrained rater. A further contribution to the reliability comes from the language of the Scale, its use of popular terms and its use of words and concepts that attendants themselves use in describing the children. A third aid to reliability is that the ward situation for the individual children has many shared characteristics. For the bladder training, for example, the procedures are similar, and the same facilities are used. Spurious reliability may come from several sources. The first is that these raters have communicated about the children and have reached great agreement about the children before the ratings. The children are not new to them. A second source, and one that is obscure, is the encouragement to make the ratings reliable. This was a part of the task, and it may have led the rater to visualize the responses of her co-rater and possibly to communicate about those ratings to the other rater. This must be seen as a main weakness of the study.

The comparisons between the cottages on mean Behavioral Rating Scale scores and mean Vineland Social Maturity Scale Age Quotients, as reflected in the t-values, indicates that the Behavioral Rating Scale successfully discriminated between the criterion groups. Variance in the criterion measures may have been increased due to the length of time since testing, however, this may have been offset by the use of criterion scores in placing the residents in their respective cottages.

The results of the factor analysis of the Behavioral Rating Scale indicate three factors which account for the major amount of the variance; factors I, II, and III. All eleven factors will be interpreted. Although they are primarily defined by the loadings of the respective items on them, the pattern and content of the loadings leads to the following factor interpretations:

FACTOR I. This is a general factor. The items measuring the self-care skills: Bowel and Bladder Training, Dressing, Feeding, and Bathing Skills load most highly on it. Several items, Attention to Personal Appearance, Participation in Entertainment or Play Activity, Type of Contact with Other Residents, Cooperativeness, and Complexity of Commands and Signals Followed share loadings on this factor with loadings on Factor III. This factor appears to measure the degree to which the resident has been able to adapt to the ward routine and to respond adequately to the functional demands of such routines.

FACTOR II. This is an aggression factor. It is loaded most highly by Frequency of Aggression, Objects of Aggression, and Control of

Tantrum and Upset Behavior. The personal element of Care of Property and its destructiveness is included, while the impersonal element is excluded. This aggression is to be distinguished from the upset emotionality of Factor XI.

FACTOR III. This is a social or interactional factor. Response to Other-Initiated Contact, Attention-Eliciting Behavior, and Length of Social Contacts load most highly on it, while it shares with Factor I Participation in Entertainment or Play Activity, Type of Contact with Other Residents, Cooperativeness, Complexity of Commands and Signals Followed, and Attention to Personal Appearance.

This factor measures the social responsiveness of the resident, and includes the degree of "reachability" or warmth of the child to an active attendant, the degree to which the resident will seek attention and the amount of social or personal contact which the rater feels the resident to require.

Along with the ability of Factor I, this characteristic is reflected in how much the child participates in play activities, and the level of interaction with other residents. If the child has the ability, this factor will more accurately reflect the type of interaction. Given the Factor I ability to understand commands, and the cues to cooperate, this factor indicates the degree to which the child will cooperate or obey such commands. It will help to measure the docility of the resident, and, along with Factor I, will probably be able to accurately predict which children will be successful and which not successful in training programs.

FACTOR IV. The Body Rocking and Handmovements items load most highly on this factor, and the factor indicates the frequency with which these stereotyped behaviors occur.

FACTOR V. The Victimization item loads highly on this factor, and Participation in Entertainment or Play Activity, Type of Contact with Other Residents, and Complexity of Commands and Signals Followed load low negative on it, while Length of Social Contacts loads positively on it. For the latter the direction is the same. This factor identifies the social isolate, who also appears to be deficient in the I and III Factors, which combine to reflect social participation and the ability to interact. This factor appears to identify the resident who is socially and functionally lower than his or her peers, and is victimized because of it.

FACTOR VI. Item 22, Genital Play, loads highly negative on this factor, and, although this was assumed to be a form of autistic behavior, its independence from the other stereotyped behaviors indicates a basic difference from them. This is a sexual stimulation factor, and the high negative loading perhaps indicates that the rater is measuring how much the resident refrains from sexual self-stimulation.

FACTOR VII. The Non-Social Vocalization and Length of Social Contacts items load most highly on this factor, and it has a moderate negative correlation with Factor I. This appears, in a way similar to Factor VI, Victimization, to identify a solitary activity pattern. The Correlation with victimization is -.162. Few social contacts are required, some non-social vocalization is included, as are few cognitive skills.

FACTOR VIII and IX. These two factors measure inversely the activity of the individual. Hyperactivity loads positively on it, and Hypoactivity loads a high negative. This includes frequency of activity or periods of hyperactivity. The fact that these factors are independent seems to indicate essentially different processes, perhaps metabolic or organic factors, which are basic to them. The intercorrelation of .06 between the items verifies this hypothesis.

FACTOR X. The Complexity of Expressive Speech and Complexity of Commands and Signals Followed items load highly on this factor, both of which have Factor I components, and the latter of which also loads on the Social Factor II. An intermediate loading is given by item 10, Care of Property. This factor refers essentially to a verbal ability and understanding which opens the resident to verbal control of his behavior, in this case, to care for his property. He must have the Factor I ability, low aggressiveness and some degree of verbal control over his behavior. This factor defines amenability to verbal control, taking into account the verbal rather than the social or the physical communicative component. Its presence indicates the ability to respond to verbal cues.

FACTOR XI. Item 13, Elicitors of Temper or Upset Behavior, loads most highly on this factor, which is independent of the aggressive components of Factor II. This may represent the uncontrolled or easily set off temper behavior, the distinction between temper, crying, and distress on the one hand, and the aggression of Factor II on the other. This is an uncontrolled emotionality factor, without the personalized aggression of Factor II and the inability to respond to verbal controls of Factor X.

The eleven factors described above, which are measured by the Behavioral Rating Scale, provide a wealth of information about the retarded resident. The most fruitful of these factors appear to be the general ability, aggression, and social factors, Factors I, II, and III. Here, in addition to information on ability, the resident's individual pattern of response in terms of social behavior and combative or resistant behavior is evaluated. The social and aggression factors appear to include several traditional motivational or personality variables, whose importance is accepted in personality description for other populations. The fact that these factors do arise is in part a function of the item content and the implicit and explicit dimensions built into the Scale, however the fact that the items intercorrelated and clustered in this way would be difficult to predict from an examination of the item content. This suggests that these factors do manifest themselves in the behavior of the children, and that they may be of considerable importance. In the author's experience, when a resident is brought before staff, the child's idiosyncracies, preferences and aversions, social behavior, and particularly his aggressive behavior, or lack of it, are discussed, however no structured assessment is made of these areas. The Scale appears, therefore, to measure areas of the child's behavior which have been implicitly deemed important in practice, yet which have been measured inadequately or de-emphasized.

The factor analysis of the data does not disclose the ways in which these factors are important in working with the child. One may make hypotheses, for example that individuals low on Factors I and II and high on Factor III may have a good potential for training, or, that if Factor II is high, it may have to be worked with successfully before progress can be made on Factor I. These relationships however are directions for further research. Workers in the area of mental retardation should investigate how the factors measured by the Scale operate in the life of the child, and how the factors may be influenced within training programs. The Scale appears to have reached a stage of development where statistical methods should be applied to describe the child in terms of Factor scores, and these Factor scores correlated with criteria within the training situation.

There are indeed gaps in the instruments now used in evaluation of the retarded resident in terms of the information provided, and the Behavioral Rating Scale appears to be a useful addition to such evaluation. A comparison of the Vineland Social Maturity Scale with the Behavioral Rating Scale highlights certain advantages of the latter. The Vineland Social Maturity Scale requires administration by a trained professional on an individual basis including time spent with the aide or attendant. In contrast, raters may be quickly trained to use the Behavioral Rating Scale, and can rate approximately 40 of their residents in 10-20 hours. The advantages in economic terms are apparent. The longitudinal studies, for example, are more conveniently done, since ratings could be made more frequently and at less cost. The Behavioral Rating Scale points out areas of behavioral deficiency that are verbally described, and it presents the stages of development and improvement along these lines. It is clearer to say that this child is at a level where "He has great difficulty in dressing; can undress completely (not including fastening and unfastening)" and that he should be able to "Dress and undress self for the most part, but needs help with activities such as fastening and unfastening," than it is to say "This child is deficient in dressing skills, and should improve them."

Another more diffuse advantage of the Scale, is the level of participation and involvement which it offers the attendant. In the author's experience, the attendants are consistently willing and deeply motivated to be helpful to the child in any way possible, yet are often frustrated by their own lack of ability and understanding. Sometimes they feel that they feed the children and care for their bodily needs, but that there is no recognition for the therapeutic aspects of their role. The professional comes on the ward, makes his observations, designates areas of deficiency and strength, formulates a treatment plan, and then asks them to carry it out. Meanwhile they are relegated to a mechanical role. The Behavioral Rating Scale, as the author has seen it operate, offers the attendant the opportunity to express his views in a systematic way, to give his opinion, and encourages him, if he so desires, to work in specific areas with his children. He may then realize and report the benefits of his efforts.

SUMMARY

The above presentation and introductory statistical analysis of the Behavioral Rating Scale shows that it is able to discriminate among the residents of the cottages grouped according to levels of functional adaptation. It is an instrument that measures important factors in the life of the severely or profoundly retarded institutional resident. It may be used by a naive, minimally trained individual who has been in close contact with the resident for a year or more. The Scale appears to be potentially useful for screening individuals for training programs, for reflecting such changes when they do occur, and for pointing to areas of successful modification.

APPENDIX I

BEHAVIORAL RATING SCALE

Name of Resident ______________________________ Cottage ______________

Dates of Rating ____________________

Birth Date _____________ Sex _____________ Race ________ Recorder ____

Physical Handicaps: ____

____

Comments:

The following is a set of rating scales focusing on the behavioral dimensions of our severely and profoundly retarded residents. Each of the categories, for example, Feeding Skills, is considered to be a dimension along which each person may be assigned a score from 1 to 5. Please check the one point on each scale which best describes his behavior and note any difficulties in scoring in the margin. Since one of the purposes of this administration is to check on the reliability of the ratings, please do not discuss your ratings with other staff members, even though they may have more information about a particular area.

You will find that there are certain areas of behavior about which you will need more information in order to make a good judgment. Interaction with the resident and observation of him with these points in mind will probably be called for in this case.

I. Bathing--the degree to which the individual bathes himself

1.____ Bathes self as completely as possible within the limits set by cottage policy

2.____ Attempts to bathe self, at least in part, but needs supervision to insure degree of cleanliness

3.____ Responds to commands which aid in certain procedures, but does not attempt to wash self

4.____ Does not attempt to help with bathing procedure, but does not resist

5.____ Resists bathing procedure

II. Frequency of Aggression--the number of times that aggressive behavior is demonstrated. Aggressive behavior is that which molests or hurts other persons and destroys property.

1.____ Aggressive behavior is never noted

2.____ Aggressive behavior occurs infrequently, i.e., not more than twice a week, and not often enough to be a problem

3.____ Is aggressive a moderate amount of the time, approximately once a shift

4.____ Aggressive behavior occurs rather often, 3 to 4 times per shift

5.____ Aggressive behavior is frequent, 5 or more times per shift

III. Control of Angry or Tantrum Behavior--the ease with which the individual's tantrum behavior is controlled by himself or someone else

1.____ Does not need control of anger responses by another, as the direction and degree of anger are appropriate

2.____ Anger is easily controlled by cottage personnel who can talk or kid him out of it

3.____ Special activities may distract him, often causing him to forget the cause of his anger and reducing the affect or emotion

4.____ Difficult to control his tantrum behavior, but this may be accomplished without removing him from the ward

5.____ No control over tantrum behavior; must be isolated or given special supervision during such periods for protection of self and others

IV. Participation in entertainment or play activity--the degree to which the individual takes part in cooperative play activity

1.____ Initiates play activities and participates in other functions

2.____ Participates in activities which are initiated by someone else; needs encouragement

3.____ Will participate in activities but needs someone constantly interacting with him

4.____ Does not participate in other-initiated activities, although he seems to enjoy the activity around him

5.____ Does not participate or seem to have interest in any type of play activity

V. Type of Contact with Other Residents--the level of interaction with other residents

1.____ Cooperative verbal communication

2.____ Cooperative play, with no verbal communication

3.____ Pleasurable, nonaggressive physical contact, including touching, sitting with or lying with other residents

4.____ Uncooperative, aggressive or agitative contact

5.____ No social contact with other residents

VI. Hyperactivity--the degree to which unusual increase in speed or amount of physical activity is characteristic of the individual's behavior

1.____ Moves about easily and appropriately

2.____ Moves about appropriately most of the time, but may become over-active when upset or excited

3.____ Usually moves about appropriately, but there may be extended periods of time in which he may become over-active

4.____ Over-active a good deal of the time

5.____ Extremely over-active almost all of the time

VII. Victimization--the degree to which other residents make the individual an object of their upset, agitative, and aggressive and attention-seeking behavior

1.____ Is treated with respect by the other residents and is, only in rare instances, agitated or disturbed by them in any way

2.____ Has to put up with the general horseplay and agitative behavior which exists in the cottage, but is not usually the object of direct attack

3.____ Is, occasionally, the object of attack of other residents

4.____ Is constantly being mistreated and attacked by certain residents

5.____ Is constantly being mistreated and attacked by quite a few of the residents

VIII. a. Dressing Skills (regarding those wearing shirt and pants)--the degree of skill the individual has achieved in the dressing procedure

1.____ Dresses and undresses self completely and without assistance

2.____ Dresses self for the most part, but needs help with activities such as buttoning, tying laces, etc. Undresses self completely

3.____ Has great difficulty dressing; can undress completely

4.____ Has great difficulty dressing; needs help with undressing

5.____ Has to be completely dressed and undressed

b. Dressing Skills (regarding those wearing special cottage clothing)--the degree of skill the individual has achieved in the dressing procedure

1.____ Dresses and undresses self completely and without assistance

2.____ Dresses and undresses self for the most part, but needs help with activities such as fastening and unfastening

3.____ Has great difficulty dressing; can undress completely (not including fastening and unfastening)

4.____ Has great difficulty dressing; needs help with undressing (not including fastening and unfastening)

5.____ Has to be completely dressed and undressed

IX. Body Rocking--repetitive rhythmic movement of the whole body; might include repetitive moving, swaying or jumping

1.____ Activity is never observed

2.____ Activity is rarely observed

3.____ Activity is observed occasionally, but only during the quiet periods or times of excitement

4.____ Activity is observed frequently

5.____ Activity is observed almost all the time

X. Care of Property--the degree to which the individual is careful of personal and cottage property

1.____ Is careful with cottage furnishings, clothing, toys, and may try to keep others from abusing them

2.____ Is not destructive of personal and cottage property, but is not particularly concerned with their care or conservation

3.____ Neglects items, uses them roughly and with little thought concerning their care

4.____ Destroys or rips up certain types of cottage or personal property

5.____ Is destructive of numerous types of items and has to be supervised on this account

XI. Toilet Training (bowel)--the degree to which the individual is trained for bowel control; his carrying through the procedure of elimination as well as knowing how. Complete training refers not only to the act of elimination at the proper time, but also wiping, flushing, and washing of hands

1.____ Fully bowel trained, including expressing his need to eliminate and carrying out the procedure on his own

2.____ Fully trained in that he expresses his need to eliminate, but may need help in carrying out the procedure

3.____ Usually indicates his need to eliminate; however occasionally does not

4.____ Does not indicate his need to eliminate, yet will usually eliminate if placed on the toilet

5.____ Not trained; might eliminate on the toilet, might not

XII. Non-Social Vocalization--sounds such as whining, babbling, or "singing," which are often made when the resident is alone and which have no social or communicative purpose

1.____ Activity is never observed

2.____ Activity is rarely observed

3.____ Activity is observed occasionally, but only during the quiet periods or times of excitement

4.____ Activity is observed frequently

5.____ Activity is observed almost all the time

XIII. Elicitors of Temper or Upset Behavior--the ease with which upset behavior is elicited. Upset behavior may be defined as that behavior which is a change from a stable, consistent state to one which is unstable and demonstrates the frustration or disturbance of the individual through various emotional outlets

1.____ Mood is well-controlled and deliberate provocation must be demonstrated in order for him to become disturbed or angered

2.____ Becomes upset fairly easily by appropriate stimuli

3.____ Easily upset or angered by appropriate stimuli

4.____ Upset at slightest change in routine or from no apparent irritating source

5.____ No response to irritating stimuli resembling temper or upset behavior

XIV. Toilet Training (bladder)--the degree to which the individual is trained for bladder control; his carrying through the procedure of elimination as well as knowing how. Complete training here refers to proper care regarding cleanliness after elimination as well as flushing, if appropriate

1.____ Fully bladder trained, including expressing his need to eliminate and carrying out the procedure on his own

2.____ Fully trained in that he expresses his need to eliminate, but may need help in carrying out the procedure

3.____ Usually indicates his need to eliminate; however, occasionally does not

4.____ Does not indicate his need to eliminate, yet will usually eliminate if placed on the toilet or at the urinal

5.____ Not trained; might eliminate on the toilet, might not

XV. Cooperativeness--the degree to which the individual responds to cottage personnel regarding care, discipline and cottage routine. This scale is concerned with "Cooperation" rather than ability to respond. Just because an individual does not respond does not mean that he is being uncooperative

1.____ Always willing to help with cottage routine, self-care and other activities

2.____ Usually cooperative, but becomes stubborn occasionally

3.____ Is often stubborn

4.____ Is very uncooperative and difficult; always seems to be resisting

5.____ Does not respond to cottage routines or other activities; must be guided and cared for

XVI. Hand Movements--repetitive hand movements, hand waving, and the waving of the hands or articles in front of the eyes. This is distinguished from purposeful hand activity

1.____ Activity is never observed

2.____ Activity is rarely observed

3.____ Activity is observed occasionally, but only during the quiet periods or times of excitement

4.____ Activity is observed frequently

5.____ Activity is observed almost all of the time

XVII. Hypoactivity--the degree to which an individual's behavior is characterized by a relative lack or slowness of physical activity

1.____ Moves about easily and appropriately

2.____ Moves about appropriately most of the time, but may become under-active when upset or excited

3.____ Usually moves about appropriately, but there may be extended periods of time in which he may become under-active

4.____ Under-active a good deal of the time

5.____ Extremely under-active almost all of the time

XVIII. Complexity of Expressive Speech--the degree to which an individual expresses himself. This scale is designed to measure the level of communication and not, necessarily, clarity of communication

1.____ Can carry on a limited but understandable conversation, using long and quite complex sentences

2.____ Forms phrases and simple sentences

3.____ Language consists of a few words which express basic needs

4.____ Babbles and forms near word approximations, such as "bah, Mah," etc.

5.____ Makes automatic and repetitive sounds

XIX. Objects of Aggression--the extent of the individual's aggressive behavior

1.____ No aggression which is noticeable

2.____ Is aggressive only toward certain individuals

3.____ Is aggressive toward almost all other residents

4.____ Is aggressive toward anyone and everyone, including attendants and new people in the cottage

5.____ Is aggressive not only toward all cottage personnel and residents but readily becomes destructive of his environment

XX. <u>Attention-Eliciting Behavior</u>--the means by which the individual obtains attention

1.____ Enjoys attention but does not actively demand it, as he receives it because of his constructive activities in the cottage and his level of sociability

2.____ Enjoys attention and gets it because he is receptive and enjoyable; more so than because of special duties in the cottage or his level of social competence

3.____ Actively seeks attention and may become a pest, but does not usually disrupt cottage activity

4.____ Uses various techniques such as tantrum, aggressive and destructive behavior to gain attention

5.____ Does not seek attention

XXI. <u>Complexity of Commands and Signals Followed</u>--the complexity of signal to which the individual responds. The important thing in making a judgment on this scale is whether the individual follows the command. He may understand it but not follow it, or he may act haphazardly, but not in response to the command. It must be appropriate to the signal, follow it fairly closely, and be a consequence of it. Try to distinguish this from "Cooperativeness." Cooperativeness has to do with the willingness to perform, while this scale attempts to establish the level of speech which the individual understands and follows.

1.____ Follows new verbal instructions with minimal demonstration and follows a great variety of routine commands

2.____ Follows routine instructions, but must have new instructions demonstrated

3.____ Follows only very simple and routine instructions

4.____ Follows only gestural commands and signals which involve a definite change in tone

5.____ Follows no gestural or verbal commands

XXII. <u>Genital Play</u>--the massaging of the genitals rather than just touching them occasionally. The point to make is whether this is self-stimulation

1.____ Activity is never observed

2.____ Activity is rarely observed

3.____ Activity is observed occasionally, but only during the quiet periods or in times of excitement

4.____ Activity is observed frequently

5.____ Activity is observed almost all of the time

XXIII. <u>Feeding Skills</u>--the degree of skill the individual has achieved in the feeding process

1.____ Eats slowly, neatly, and in a manner which would be appropriate in a public restaurant

2.____ Feeds self efficiently and fairly neatly without help

3.____ Feeds self with spoon, but does it sloppily and inefficiently

4.____ Has great difficulty with the spoon and sometimes eats with the hands

5.____ Does not attempt to feed self; has little understanding of feeding instructions and is fed by another

XXIV. <u>Response to Other-Initiated Contact</u>--

1.____ Can be drawn out by one or two persons who have been associated with him for a long period of time

2.____ Likes to have someone talk to him, plays games, yet somewhat reserved

3.____ Responds to new people in the cottage after minimal acquaintance

4.____ Is mildly responsive to most attendants with a fair amount of effort on their part

5.____ Cannot be drawn out, totally unresponsive to social stimuli

XXV. <u>Attention to Personal Appearance</u>--

1.____ Looks forward to and anticipates grooming tasks such as brushing teeth and combing hair as well as being able to do many of them on his own

2.____ Does many grooming tasks on his own, such as brushing teeth and combing hair

3.____ Attempts to carry out grooming tasks but must have help from cottage personnel

4.____ Resists being cleaned up

5.____ Makes no effort to accomplish cleaning, combing, etc. for himself. Must be bathed and groomed by attendant.

XXVI. <u>Length of Social Contacts</u>--

1.____ Does not make social contacts

2.____ Prefers short contacts infrequently, with simple movements or sounds

3.____ Prefers short contacts often throughout the day

4.____ Prefers more extensive contacts, conversations, affection, one or two times per day

5.____ Prefers contact as long and as often as possible

APPENDIX II

INTERRATER ITEM RELIABILITIES FOR THREE COTTAGES, N = 115 AND POOLED OR COMBINED RELIABILITIES FOR EACH ITEM

Item	Cottage C	Cottage A	Cottage B	Combined
1	.26	.97	.78	.78
2	.52	.93	.85	.73
3	.45	.99	.67	.76
4	.25	.99	.80	.74
5	.47	.97	.78	.81
6	.00	.96	.66	.74
7	.06	.65	.47	.38
8	.72	.90	.87	.87
9	.43	.99	.79	.70
10	.49	.95	.73	.75
11	.75	.95	.86	.90
12	.29	.82	.77	.67
13	.49	.95	.65	.68
14	.75	.99	.92	.92
15	.72	.80	.85	.79
16	.40	.97	.96	.86
17	-.07	.82	.57	.57
18	.68	.97	.67	.84
19	.53	.90	.89	.78
20	.52	.98	.82	.73
21	.45	.92	.94	.80
22	.49	.88	.66	.69
23	.85	.97	.99	.94
24	.35	.77	.78	.60
25	.51	.94	.84	.83
26	.14	.81	.59	.55

Total Score Reliabilities

Cottage A	.98
Cottage B	.91
Cottage C	.84

APPENDIX III

TABLE OF INTERCORRELATIONS FOR 26 ITEMS OF THE BEHAVIORAL RATING SCALE, N = 115

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1		-.02	.22	.62	.62	.32	-.05	.66	.20	.05	.66	.35	.09	.68	.59	.20	.27	.48
2			.66	-.08	-.02	.35	-.14	-.05	.16	.47	-.05	.15	.31	-.05	.09	.13	-.05	.02
3				.18	.21	.47	-.08	.10	.11	.43	.04	.07	.49	.06	.26	.19	.17	.05
4					.77	.17	-.06	.60	.27	-.15	.54	.31	.19	.57	.57	.20	.37	.48
5						.13	-.10	.51	.24	-.09	.50	.36	.16	.51	.56	.19	.35	.61
6							-.20	.13	.12	.24	.18	.21	.23	.15	.31	.16	.06	.14
7								-.12	-.08	.10	-.08	-.16	.15	-.05	.06	.02	.07	-.17
8									.27	-.03	.76	.40	.10	.79	.53	.21	.14	.45
9										-.12	.31	.38	.05	.27	.26	.45	.08	.21
10											.03	-.03	.27	-.01	.20	-.05	-.14	-.03
11												.49	.07	.94	.59	.29	.00	.49
12													.13	.45	.22	.21	.12	.31
13														.06	.35	.09	.11	.07
14															.58	.29	.06	.47
15																.19	.18	.36
16																	.29	.24
17																		.27

	19	20	21	22	23	24	25	26
1	.10	.40	.61	.25	.60	.33	.80	-.35
2	.78	.09	-.01	.16	-.11	.02	-.06	.22
3	.65	.22	.11	.17	.14	.16	.15	.05
4	.03	.50	.49	.19	.69	.42	.69	-.50
5	.04	.47	.48	.23	.63	.39	.61	-.40
6	.38	.15	.25	.08	.13	.16	.22	-.03
7	-.12	.25	.12	.06	.03	.22	.05	.00
8	-.03	.28	.51	.02	.82	.15	.66	-.33
9	.07	.10	.16	.28	.24	-.08	.23	-.12
10	.36	.13	.09	.07	-.04	.05	.04	.16
11	-.05	.19	.52	.06	.72	.11	.67	-.19
12	.09	.05	.26	.08	.40	.03	.27	.02
13	.37	.28	.24	-.01	.15	.31	.09	-.11
14	-.06	.22	.52	.09	.76	.11	.70	-.22
15	.14	.50	.66	.07	.62	.37	.58	-.34
16	.13	.16	.20	.28	.20	-.05	.30	-.07
17	.05	.39	.37	.25	.17	.23	.32	-.22
18	.01	.27	.49	.80	.44	.21	.50	-.22
19		.20	.03	.11	-.05	.12	-.02	.14
20			.56	.15	.35	.66	.48	-.45
21				.14	.49	.48	.67	-.36
22					.07	.02	.26	.00
23						.23	.65	-.29
24							.35	-.38
25								-.42
26								

APPENDIX IV

TRANSFORMATION MATRIX-OUTPUT FROM NORMALIZED VERIMAX FACTOR ROTATION PROGRAM (VRMX) FOR BEHAVIORAL RATING SCALE

	Variable										
Factor	1	2	3	4	5	6	7	8	9	10	11
1	.84	.08	.39	.17	-.07	-.12	.11	.10	-.18	.10	.11
2	-.22	.88	.07	.03	.06	-.10	.00	.26	.00	.13	.13
3	-.27	-.17	.74	-.29	.27	-.01	-.32	-.07	-.24	-.01	.17
4	-.29	-.05	.04	.59	-.14	-.47	.09	-.10	-.53	-.10	-.15
5	.12	-.05	-.19	.27	.88	-.23	-.09	-.08	.16	.13	.03
6	-.09	-.06	.13	.44	.05	.49	.30	-.22	.11	-.31	.54
7	-.03	-.04	-.15	-.38	.17	.07	.61	-.32	-.45	.34	.08
8	-.15	-.20	.05	.24	.12	.43	.11	-.67	-.16	.40	-.08
9	-.18	-.09	.40	.02	-.03	-.33	.56	.06	.57	.11	-.18
10	-.06	.14	.13	.28	-.18	.21	-.27	-.52	.16	.64	-.15
11	-.09	-.33	-.20	-.03	-.22	.34	-.11	.16	.08	.40	.69

APPENDIX V

FACTOR LOADING MATRIX FOR ELEVEN FACTORS AND 26 VARIABLES, OUTPUT OF NORMALIZED VERIMAX FACTOR ROTATION PROGRAM (VRMX)

	Factor Loadings										
Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
1	.76	.06	.27	-.03	-.06	-.22	.03	.26	-.14	.07	-.09
2	-.09	.90	.00	.12	-.05	-.06	.11	.05	.11	.11	.03
3	.13	.78	.02	.00	-.06	-.12	-.10	.18	-.16	-.06	.35
4	.66	-.02	.43	.05	-.25	-.19	.06	-.07	-.23	-.14	.19
5	.58	.02	.41	.00	-.32	-.26	.17	.16	-.23	.10	.18
6	.14	.33	.09	.04	-.16	-.02	.09	.84	-.03	.01	.10
7	-.04	-.12	.21	-.01	.86	-.07	-.04	-.15	-.04	-.03	.12
8	.89	.01	.07	.09	-.08	.10	.04	-.03	-.03	-.04	.02
9	.19	.04	.06	.80	-.13	-.23	.26	-.01	.14	-.06	.09
10	.03	.51	-.06	-.18	.24	-.14	-.20	.16	.30	.48	.20
11	.89	-.03	-.02	.16	.01	.04	.17	.07	.11	.15	-.03
12	.38	.06	-.03	.18	-.09	-.03	.81	.10	-.02	.02	.07
13	.06	.32	.17	.03	.13	.09	.07	.07	-.07	.04	.84
14	.92	.03	-.02	.13	.03	.02	.12	.04	.04	.09	-.04
15	.63	.09	.36	.12	.05	-.02	-.06	.20	.06	.18	.33
16	.22	.15	-.09	.77	.11	-.03	-.07	.07	-.37	.09	-.05
17	.08	.00	.23	.08	.01	-.15	.01	.04	-.87	.05	.07
18	.45	.02	.20	.12	-.36	.01	.18	-.12	-.25	.61	.00
19	-.05	.90	.12	.05	-.06	.04	.07	.08	-.04	-.05	.02
20	.25	.18	.80	.08	.18	-.05	-.07	.01	-.17	.09	.04
21	.52	-.05	.48	.09	.14	-.02	.05	.26	-.19	.39	.07
22	.06	.11	.02	.19	.07	-.91	.02	.02	-.13	.02	-.07
23	.88	-.02	.12	.02	.00	.00	.11	-.09	-.08	-.09	.16
24	.12	.08	.84	-.18	.14	.03	.11	.08	-.08	.03	.08
25	.78	-.02	.31	.09	.02	-.22	-.09	.14	-.18	.13	-.07
26	-.27	.25	-.62	-.18	.27	-.12	.35	-.01	.00	.14	-.14

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