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The Aberrant Behavior Checklist with Children and Adolescents with Dual Diagnosis[1]

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The Aberrant Behavior Checklist (ABC; Aman, Singh, Stewart, & Field, 1985a, 1985b) is a 58-item third-party informant rating scale originally developed for institutionalized, low-functioning adolescents and adults. The present study investigated the appropriateness of the scale for youngsters with dual diagnosis of mental retardation and psychiatric disturbance. Over a period of $2^1/_2$ years, 204 patients (199 after data reduction) from a child psychiatry unit were rated twice daily by direct care staff. Data analysis addressed internal consistency, interrater reliability, criterion validity, and robustness of the factor structure. Internal consistency was satisfactory with alpha coefficients ranging from .82 to .94. Interrater reliability varied between subscales but was relatively low (Pearson correlations between .39 to .61). In terms of its criterion validity, the ABC was sensitive to psychiatric diagnoses and age and the original 5-factor structure was robust (congruence coefficients ranged between .80 to .89). Yet, only a relatively small proportion of the variance (31.5%) was explained by factor analysis indicating possible limitations of the ABC for this population.

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Given the paucity of assessment instruments for this particular population and the difficulty involved in developing new population-specific instruments, the ABC can be recommended for children and adolescents with dual diagnosis.

Mental retardation is a powerful predictor for psychiatric disturbance (Corbett, 1979; Gilson, Levitas, & Mead, 1987; Reiss, 1988a; Rutter, Graham, & Yule, 1970). Yet, the manifestation of psychopathology is not readily recognizable in people with mental retardation (Costello, 1982), which means that even the extent of the problem is not well understood and estimates vary from data base to data base (Gilson et al., 1987; Jacobson, 1982; Nihira, Price-Williams, & White, 1988). Therefore, there is a great need for diagnostic criteria and screening procedures in this area. Prerequisites for accurate screening are reliable and valid psychopathology assessment tools.

In recent years a few promising assessment instruments have become available. Among them one can distinguish between instruments that are based on DSM-III or DSM-III-R criteria, such as the Psychopathology Instrument for Mentally Retarded Adults (Kazdin, Matson, & Senatore, 1983; Matson, Kazdin, & Senatore, 1984; Senatore, Matson, & Kazdin, 1985), and the Reiss Screen for Maladaptive Behavior (Reiss, 1988a, 1988b), and those that have a strictly empirical foundation such as the Aberrant Behavior Checklist (ABC; Aman, Singh, Stewart, & Field, 1985a; 1985b) and the Strohmer-Prout Behavior Rating Scale (Strohmer & Prout, 1989). However, all these instruments have in common that they were developed primarily for adults, and there are no assessment instruments for the younger population.

Since it is logistically a very difficult and time-consuming task to obtain a sufficiently large number of children with dual diagnosis in order to develop specialized assessment instruments for the younger age groups, it may take some time until reliable and valid instruments will be ready to use. In the meantime it seems worthwhile to investigate to what extent some of the adult scales can be used for younger individuals. The purpose of the present study was to examine the usefulness of the ABC in a group of children and adolescents with dual diagnosis.

The ABC is a widely used and psychometrically sound adult psychopathology assessment instrument that was originally developed on institutionalized mentally retarded adolescents and adults with moderate, severe, and profound mental retardation. Its applicability for other subgroups such as children or community residents remains to be determined. It is a third-party informant instrument composed of five subscales encompassing 58 items of observable, undesirable behaviors. Item selection was

begun by compiling lists of phrases describing maladaptive behaviors obtained from case records and other rating instruments, and their wording was adjusted in consultation with nursing staff. The subscales were originally developed by factor analysis of ratings of 927 residents with moderate to profound mental retardation from institutions in New Zealand. The authors sought to find subscales that covered a broader spectrum of clinically meaningful domains with relatively homogeneous items, rather than broad band factors consisting of heterogeneous items. Five factors were derived and labeled Irritability, Lethargy/Social Withdrawal, Stereotypic Behavior, Hyperactivity, and Inappropriate Speech. Internal consistency estimates ranged from .86 to .94 (Aman, Singh, Stewart, & Field, 1985c). Test–retest reliability was excellent (Aman et al., 1985b) and interrater reliability was satisfactory to good (Aman, Singh, & Turbott, 1987). Several types of validity were examined and considered as good for most of the subscales (Aman et al., 1985b). The stability of the original factor structure has been evaluated in two subsequent studies. The first was conducted in the United States by Aman, Richmond, Stewart, Bell, and Kissel (1987), who rated 531 subjects in a state institution and factor analyzed the results using the same procedures that were employed to develop the scale. As assessed by the coefficient of congruence the factor structures of the original (New Zealand) and new (United States) data sets were shown to be very similar. In a second study, Newton and Sturmey (1988) administered the ABC to 209 adults in two large residential facilities in Great Britain. Besides sociocultural and geographic differences, this population differed from the previous study groups in terms of a substantial proportion of nonambulatory subjects (45%), who were explicitly excluded from the Aman et al. (1985a) sample. Again, the identical factor analysis procedure was employed as described by Aman et al. (1985a). The ABC's original five-factor domains were cross-tabulated with the five factors found by Newton and Sturmey (1988), who concluded that validation of the factor structure was demonstrated.

METHOD

Setting

This study was conducted at an inpatient psychiatric unit for children and adolescents (John Merck Program for Multiply Disabled Children, Western Psychiatric Institute and Clinic, University of Pittsburgh). The unit had 24 beds, and the length of patients' stay at the hospital was variable, averaging between 60 to 90 days. Weekdays at the Merck Program were

Table I. Frequency of DSM-III Psychiatric Diagnoses Among 204 Children and Adolescents with Mental Retardation/Developmental Disabilities Rank-Ordered by Frequency of Major Category Totals

Psychiatric diagnosis	Position in multiple diagnoses				Category totals
	1	2	3	4	
Organic brain syndrome	4	2	–	–	76
Atypical or mixed OBS	46	18	4	1	
Organic personality syndrome	1	–	–	–	
Pervasive developmental disorder	5	3	–	–	66
Infantile autism	36	9	–	–	
Atypical PDD	7	2	–	–	
Childhood onset	2	2	–	–	
Other disorders of infancy, childhood, and adolescence	–	–	–	–	43
Oppositional disorder	26	14	2	–	
Elective mutism	–	1	–	–	
Attention deficit disorder	1	1	2	–	36
With hyperactivity	16	16	–	–	
Adjustment disorder	–	1	–	–	34
With disturbance of conduct	10	3	–	–	
With mixed disturbance of emotions and conduct	15	4	–	–	
With atypical features	1	–	–	–	
Affective disorders	2	–	–	–	21
Major depression	10	1	1	–	
Bipolar depression	1	–	–	–	
Dysthymic disorder	1	1	–	–	
Atypical	4	–	–	–	
Functional disorders	1	7	4	–	12
Anxiety disorders	3	5	1	–	11
Posttraumatic stress disorder	2	–	–	–	
Conduct disorder	–	–	–	–	6
Undersocialized/aggressive	1	–	–	–	
Undersocialized/nonaggressive	1	–	–	–	
Socialized/aggressive	4	–	–	–	
Socialized/nonaggressive	–	–	–	–	
Stereotyped movement disorder	–	–	–	–	4
Chronic motor tic disorder	–	1	1	–	
Atypical SMD	1	1	–	–	
Disorder of impulse control	–	–	–	–	3
Atypical ICD	1	–	–	–	
Intermittent explosive ICD	1	1	–	–	
Dementia	–	–	–	–	1
Presenile Onset	–	–	1	–	
Psychosexual disorders	–	–	–	–	1
Psychosexual disorder not elsewhere classified	1	–	–	–	

highly structured. The daily schedule included self-help and daily living skills training, group activities, milieu therapy, schooling, free time, meals, and personal hygiene.

Population

Subjects. During the time of data collection, 204 patients were admitted to that unit. After data reduction procedures 199 subjects remained in the data base. Their ages ranged from 3 to 23 years with a mean age of 10.7 years (modal age, 8 years); 74.3% of the subjects fell in the age range of 5 to 18 years. The gender ratio was 3:1, with 154 male and 50 female. The majority of the patients was white, 20% was black, and 1% fell into other categories. Most subjects were mentally retarded; 10% had profound retardation, 17% severe, 30% moderate, and 29% mild; 8% were diagnosed in the borderline range and 7.5% was untestable.

Table I describes the sample in terms of the psychiatric diagnoses. A comprehensive psychiatric diagnosis was established for each patient by a child psychiatrist or a psychiatric resident and was then presented at a multidisciplinary diagnostic conference prior to admission to the hospital. A second diagnostic workup was conducted at discharge at which time the long-term observations during hospitalization were integrated. Diagnoses in Table I are discharge diagnoses. The most prevalent psychiatric diagnosis was mixed organic brain syndrome (69 cases, 33.8%), followed by pervasive developmental disorders (66 cases or 32.3%, of which 35 had infantile autism), and disorders of infancy, childhood, and adolescence (43 cases or 21%, almost exclusively oppositional disorder). Attention deficit disorder with or without hyperactivity, adjustment disorders with or without disturbance of mood and/or conduct, and different forms of depression and emotional problems were also diagnosed in less than 20% of the cases.

Raters. At the end of their work shift direct care staff routinely completed the ABC for the patients they had been assigned to. This task was part of their job routine. Staff had different levels of professional experience and training, ranging from preprofessional child care workers to licensed psychiatric nurses. Staff was instructed by a research assistant in how to use the ABC in two training sessions demonstrating the scoring procedure and discussing each item definition. A training manual with extended item definitions was available to all staff and could be consulted at any time. Seventy-three staff were involved in data collection. Rater pairs were scheduled at irregular intervals throughout data collection to independently complete the ABC for the same patient and the same shift. These raters remained uninformed about their overlapping rating assign-

ments. Raters were double scheduled on 253 occasions, involving 56 raters and 130 subjects.

Procedure

For every patient the ABC was completed twice daily, once after the morning shift (7:00 a.m.–3:00 p.m.) and once after the evening shift (3:00 p.m.–11:00 p.m.), 7 days per week. Each rater assessed between three and six subjects per shift. Staff members were instructed to rate the child's overall behavior as it had occurred during that shift. As staff were assigned to different activities, staffing patterns enabled the raters to observe the patients only during certain portions of their shift, ranging from 1 to several hours.

RESULTS

Data Reduction

In order to reduce the clinical data base to a manageable size, the following data reduction procedures were used. First, only two ABC forms per week (Tuesdays and Thursdays) were selected, which left approximately 20 to 30 ABCs for each patient. Of these, each subject's third ABC rating was selected in an effort to attenuate effects of hospital adjustment and prolonged treatment. Staff who had completed ABCs infrequently (fewer than 50 assessments) and those who had achieved poor interrater agreement scores (two or more correlations of less than .20) were deleted. Six raters were dropped for poor interrater agreement and 37 for relatively infrequent ratings. After data reduction 199 subjects and 30 raters remained in the data base. Those 5 patients that were excluded either had fewer than three ABC forms completed or were only rated by raters that had to be dropped.

Internal Consistency

Internal consistency which reflects correlation of items with total scores was calculated by Chronbach's alpha coefficients. Internal consistency for the original five factor solution was high, with .91 for Irritability, .90 for Lethargy/Social Withdrawal, .87 for Stereotypic Behavior, .94 for Hyperactivity, and .82 for Inappropriate Speech. These values were comparable to those reported by Aman et al. (1985b) (M = .93) and by Newton

and Sturmey (1988) (M = .89). The alpha coefficient for item to the ABC total score was .95.

Interrater Reliability

Double scheduling of raters occurred on 253 occasions, involving 56 raters and 130 subjects. Given the unusual way in which interrater reliability was assessed, it is not unlikely that lower scores were obtained (see Discussion). Pearson product-moment coefficients were calculated for each subscale, with n = 253. Results were as follow: Irritability, r = .53; Lethargy, r = .49; Stereotyped Behavior, r = .61; Hyperactivity, r = .48; Inappropriate Speech, r = .39.

Factor Structure Stability

One objective of this research project was to determine how well the original five-factor structure would fit the population at hand. The following analytic steps were taken: First, the identical factoring procedures used on the original data set by Aman et al. (1985a) and later by Newton and Sturmey (1988) were calculated. This involved a principal factoring method with iteration and varimax rotation of factors, followed by the promax rotation method, constraining the solutions to five factors. Table II presents items for each of the factors with the highest loading.

The factor structure of the original solution (Aman et al., 1985a) and the new five-factor solution was compared by coefficients of congruence (Cattell, 1978). The congruence coefficients for Subscales 1 through 5 were .86, .82, .82, .89, and .80, respectively, which reflects a good match between the original and the current factor structure.

In terms of the amount of variance accounted for by the factor analysis, the first factor explained 11.86% of the variance, the second 10.92%, the third 8.24%, the fourth 7.44%, and the fifth factor 4.00%. The final proportion of the common variance explained by these five factors was 31.5%. This was less than reported by Aman et al. (1985a) and Newton and Sturmey (1988), who found between 71 and 76%, and 55.1% respectively. In order to investigate the increase in percentage of explained variance by permitting more factors, we generated a seven-factor solution. The increase was very modest (from 31.5 to 35.2%), which suggests that changing the composition of items on the ABC subscale for this population is not warranted.

Table II. Five-Factor Structure Loading Matrix Generated by Principal Factoring Method with iteration and Varimax Rotation Followed by Promax with Five-Factor Constraints Containing Simple Correlations[a]

Factor no./Item no.		Factor loading 1	2	3	4	5
1. Irritability						
1/8	Screams inappropriately	.78	.03	.15	.36	.27
1/10	Temper tantrums	.81	.10	.11	.40	.06
1/41	Cries and screams inappropriately	.82	.19	.25	.32	.12
1/57	Throws temper tantrums when he/she does not get own way	.80	.07	.13	.47	.11
Mean loading (n = 14)		.69	.15	.24	.36	.21
2. Lethargy/Social Withdrawal						
2/5	Seeks isolation from others	.13	.69	.20	.19	−.21
2/16	Withdrawn; prefers solitary activities	.12	.70	.18	.18	−.28
2/23	Does nothing but sit and watch others	.09	.69	.09	.02	.00
2/30	Isolates him/herself from other patients	.07	.74	.19	.14	.23
2/42	Prefers to be alone	.08	.76	.16	.21	−.20
Mean loading (n = 16)		.16	.63	.25	.20	.22
3. Stereotypic Behavior						
3/6	Meaningless, recurring body movements	.12	.32	.80	.33	.00
3/11	Stereotyped, repetitive movements	.25	.26	.83	.37	.01
3/35	Repetitive hand, body, or head movements	.18	.25	.89	.38	.04
3/45	Waves or shakes the extremities repeatedly	.17	.30	.72	.34	−.07
Mean loading (n = 7)		.25	.23	.71	.27	.15
4. Hyperactivity						
4/1	Excessively active on ward	.20	−.01	.23	.77	.06
4/15	Restless, unable to sit still	.30	.14	.39	.84	.10
4/39	Will not sit still for any length of time	.24	.15	.23	.80	.06
4/54	Tends to be excessively active	.12	−.00	.19	.79	.05
Mean loading (n = 16)		.38	.20	.27	.71	.14
5. Inappropriate Speech						
5/9	Talks excessively	.09	−.10	.03	.25	.60
5/22	Repetitive speech	.27	−.06	.13	.19	.78
5/33	Talks to self loudly	.18	.06	.13	.17	.63
5/46	Repeats a word or phrase over and over	.31	.01	.19	.11	.78
Mean loading (n = 4)		.21	.06	.12	.18	.70

[a]The table contains the highest loading items of the respective subscale.

Criterion Validity

In order to establish a measure of criterion validity for the ABC in this population, we examined whether different diagnostic subgroups of different psychiatric diagnoses would have differential ABC subscale profiles (see Table III). In order to sharpen the contrast between diagnostic groups, we selected subjects with single or maximally two diagnoses. Since there were unbalanced group sizes, a general linear models procedure was used for the analyses of variance.

Table III. Aberrant Behavior Checklist Subscale Means for Groups with Different Psychiatric Diagnoses

Subscale[a]	Adjustment disorder (n = 25)	Organic brain syndrome (n = 50)	Attention deficit disorder (n = 17)	Affective disorders (n = 18)	Infantile autism (n = 36)	Oppositional disorders (n = 25)
Irritability	3.32	4.66	4.06	1.98	4.78	5.64
Lethargy/Social Withdrawal[c]	6.44	9.02	1.47	6.89	8.11	3.56
Stereotypic Behavior[d]	1.92	5.42	0.82	0.94	5.86	2.36
Hyperactivity[b]	6.72	9.96	13.94	3.00	11.31	10.88
Inappropriate Speech	0.56	0.80	1.53	0.67	1.19	0.56

[a]Statistically significant differences in subscale scores as estimated by the General Linear Models Procedure are indicated by superscripts.
[b]$p \leq .05$.
[c]$p \leq .01$.
[d]$p \leq .001$.

Subscales Lethargy/Social Withdrawal, Stereotypic Behavior, and Hyperactivity had significantly different scores across diagnostic categories. A posteriori tests on pairwise comparisons were conducted using Tukey's Studentized Range test, with an alpha of .05, a confidence level of .95, and $df = 165$. On Lethargy/Social Withdrawal, attention deficit disorder patients had statistically lower scores than those with organic brain syndrome, and infantile autism. Likewise, on the Stereotypic Behavior scale, autistic patients were rated significantly higher than all other diagnostic categories; second highest scores were recorded for organic brain syndrome, which had significantly higher scores than the remaining groups. On the Hyperactivity subscale, a statistically significant difference was found between attention deficit disorder and affective disorders, with the former achieving the highest scores of all diagnostic groups. The differences found on these three subscales fit well with intuitive predictions as to how persons with certain specific psychiatric diagnoses might score on certain subscales.

Few differences were found across other demographic variables. None of the subscales distinguished between male and female subjects. Age differences were assessed by breaking down the study population into four approximately equal-sized groups as follows: less than 6 years, 6 to 9, 10 to 15, and greater than 15 years. The only subscale that showed significant differences across age groups was Hyperactivity, with a steady decrease of hyperactive behavior as chronological age increased (see Table IV). Again,

Table IV. Aberrant Behavior Checklist Subscale Means Across Four Age Groups

	Age (years)			
	<6	6–9	10–15	>15
Irritability	5.71	4.40	3.64	3.16
Lethargy/Social Withdrawal	7.83	7.37	5.88	4.67
Stereotypic Behavior	3.86	3.55	3.36	3.10
Hyperactivity[a]	12.91	9.70	8.93	4.92
Inappropriate Speech	1.26	1.06	0.67	0.58

[a]Statistically significant differences in subscale scores as estimated by the General Linear Models Procedure at the 0.01 level.

this finding is consistent with what one might expect to find clinically (Campbell & Werry, 1986).

DISCUSSION AND CONCLUSIONS

The main conclusion of this report is that the ABC—given that some potential limitations are taken into consideration—can be recommended for use with children and adolescents with mental retardation and psychiatric impairments. This conclusion is based on the facts that (a) the ABC factor structure was robust, (b) its subscale scores were clinically meaningful in that they were related to psychiatric diagnoses and age of the clients, and (c) the internal consistency of the subscales was satisfactory.

However, some cautionary remarks are in order. Most important, the proportion of variance explained by these five factors was relatively low (31.5%), indicating that a significant amount of variance remained unaccounted for; it was lower than the explained variance in previous studies (Aman et al., 1985a; Newton & Sturmey, 1988).

Also, levels of interrater reliability were relatively low. We can assume that low agreement among raters has contributed to the amount of variance that remained unaccounted for by the factor analysis. It is important, however, to point out that the way interrater reliability was assessed in this study was unusual and is at least partly responsible for the relatively low scores: (a) Staff members were asked to rate the child's behavior after every shift, describing behavior from a period of maximally 8 hours. This is a clear departure from standard rating procedures and from previous studies. It is likely that these rating procedures added to the error variance through halo effects, that is, the tendency of raters to score a subject in terms of

their overall impression of the subject rather than the subject's actual behavior at the time (Aman & White, 1986). The frequent completion of the ABC, which was added to an already considerable amount of staff paper work, might have contributed to a more automatic, idiosyncratic style of rating, thus lowering the level of interrater agreement. (b) Furthermore, given the variable staff assignments, it might have occurred that the raters in some cases observed the child during different times of their shift, thus actually drawing from different samples of behavior. (c) And finally, given the constraints of a clinical setting, the investigators were forced to assess agreement across varying combinations of raters from a large pool of staff rather than using fixed pairs of selected raters. This procedure confounded across-rater variance with subject variance and contributed to low levels of agreement. Therefore, it is not surprising that agreement levels were lower than those reported by Aman et al. (1985b, 1987), who examined reliability within a few fixed rater pairs. It is recommended that the ABC be used as suggested by the authors: Ratings should be based on longer time intervals, and if repeated measures are used across time, the same rater should be assigned to a client in order to reduce rater error variance.

Subscale Inappropriate Speech appeared to contribute only a modest amount of information. The average scores across psychiatric diagnostic groups, age ranges, and psychiatric subgroups were relatively low and did not seem to correlate with any of these variables. In fact, it did not seem to add much critical information in any of the previous studies either (Aman et al., 1985a, 1985b; Newton & Sturmey, 1988), and indeed Aman et al. (1985b) suggested in their original report that this subscale be treated as "experimental." Under these circumstances one might consider refining the Inappropriate Speech subscale in any revision of the ABC.

In summary, considering that the ABC was originally developed with a totally different population, it turned out to be much more suitable for this very special group of individuals than could have been expected. And given the paucity of assessment instruments for young individuals with dual diagnosis, this is a relevant and welcome finding for clinicians and applied researchers alike.

REFERENCE

Aman, M. G., Richmond, G., Stewart, A. W., Bell, J. C., & Kissel, R. C. (1987). The Aberrant Behavior Checklist: Factor structure and the effects of subject variables in American and New Zealand facilities. *American Journal on Mental Deficiency, 91,* 570-578.

Aman, M. G., Singh, N. N., Stewart, A. W., & Field, C. J. (1985a). The Aberrant Behavior Checklist: A behavior rating scale for the assessment of treatment effects. *American Journal on Mental Deficiency, 89,* 485-491.

Aman, M. G., Singh, N. N., Stewart, A. W., & Field, C. J. (1985b). Psychometric characteristics of the Aberrant Behavior Checklist. *American Journal on Mental Deficiency, 89,* 492-502.

Aman, M. G., Singh, N. N., Stewart, A. W., & Field, C. J. (1985c). The aberrant behavior checklist. *Psychopharmacology Bulletin, 21,* 845-849.

Aman, M. G., Singh, N. N., & Turbott, S. H. (1987). Reliability of the Aberrant Behavior Checklist and the effect of variations in instructions. *American Journal on Mental Deficiency, 92,* 237-240.

Aman, M. G., & White, A. J. (1986). Measures of drug change in mental retardation. In K. D. Gadow (Ed.), *Advances in learning and behavioral disabilities* (Vol. 5, pp. 157-202). Greenwich, CT: JAI.

Campbell, S. B., & Werry, J. S. (1986). Attention deficit disorder (Hyperactivity). In H. C. Quay & J. S. Werry (Eds.), *Psychopathological disorders of childhood* (pp. 111-155). New York: Wiley.

Cattell, R. B. (1978). *The scientific use of factor analysis in behavioral and life sciences.* New York: Plenum Press.

Costello, A. (1982). Assessment and diagnosis of psychopathology. In J. L. Matson, & R. Barrett (Eds.), *Psychopathology in the mentally retarded* (pp. 37-52). New York: Grune & Stratton.

Corbett, J. (1979). Psychiatric morbidity and mental retardation. In F. E. James & R. P. Snaith (Eds.), *Psychiatric illness and mental handicap* (pp. 11-25). London: Gaskell.

Gilson, S., Levitas, A., & Mead, C. (1987). *Psychiatric disorders in community based mentally retarded adults—A statewide survey.* Paper presented at the International Research Conference on the Mental Health Aspects of Mental Retardation, Evanston, IL.

Jacobson, J. (1982). Problem behavior and psychiatric impairment within a developmentally disabled population. I: Behavior frequency. *Applied Research in Mental Retardation, 3,* 121-139.

Kazdin, A. E., Matson, J. L., & Senatore, V. (1983). Assessment of depression in the mentally retarded. *American Journal of Psychiatry, 140,* 1040-1043.

Matson, J. L., Kazdin, A. E., & Senatore, V. (1984). Psychometric properties of the psychopathology instrument for mentally retarded adults. *Applied Research in Mental Retardation, 5,* 81-89.

Newton, J. T., & Sturmey, P. (1988). The Aberrant Behavior Checklist: a British replication and extension of its properties. *Journal of Mental Deficiency Research, 32,* 87-92.

Nihira, K., Price-Williams, D. R., & White, J. F (1988). Social competence and maladaptive behavior of people with dual diagnosis. *Journal of the Multihandicapped Person, 1,* 185-199.

Reiss, S. (1988a). *The Reiss screen test manual.* Orlando Park, IL: International Diagnostic Systems.

Reiss, S. (1988b, September 9). *The development of a screening measure for psychopathology in people with mental retardation.* Invited paper presented at a joint National Institute of Mental Health—National Institute of Health workshop on the assessment of the mental health aspects of mental retardation, NIMH, Rockville MD.

Rutter, M., Graham, P., & Yule, W. (1970). *A neuropsychiatric study of childhood.* London: Heinemann.

Senatore, V., Matson, J. L., & Kazdin, A. E. (1985). An inventory to assess psychopathology of mentally retarded adults. *American Journal on Mental Deficiency, 89,* 459-466.

Strohmer, D. C., & Prout, H. T. (1989). *Strohmer-Prout Behavior Rating Scale.* Schenectedy, NY: Genium.