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# AAMD Adaptive Behaviour Scale: Normative, Reliability and Validity Data.[1]

Hamish P.D. Godfrey[2], Stephanie Frost, Eve Snelling, Robert G. Knight, Eric J. Shelton, Barry E. Longmore
Department of Psychology, University of Otago,
and
Psychology Department, Otago Hospital Board.

Normative data from 210 patients diagnosed as mentally retarded and 110 patients diagnosed as psychotic are presented. Differences between the New Zealand sample of mental retarded patients and the original American normative sample were found, highlighting the need for local norms. Consistent with overseas research, only Part 1 of the Adaptive Behaviour Scale was found to be adequately reliable. Separate factor analyses for each diagnostic group produced three factors, labelled Independent Functioning, Social Maladaption, and Personal Maladaption. These factors were consistent with results from previous studies, and supported the construct validity of the scale.

The Adaptive Behaviour Scale (ABS) was developed by the American Association on Mental Deficiency (AAMD) as a means of assessing the adaptive behaviour of mentally retarded, emotionally maladjusted, and developmentally disabled individuals. The scale was constructed to provide an objective description and evaluation of an individual patient's ability to cope with the natural and social demands of their environment (Fogelman, 1975). The ABS has grown in popularity and gained acceptance in many countries, including New Zealand, and provides useful information for predicting discharge from an institution (Spreat, 1980), or successful community placement (Eyman & Call, 1977; Thiel, 1981), and for evaluating training programmes for the mentally retarded (King, Soucar, & Isett, 1980).

A major limitation to the use of this scale to assess patients in New Zealand is the lack of local normative and psychometric data, which are essential for accurate scale interpretation (Anastasi, 1982). Discrepancies between New Zealand and overseas normative data have been documented for other measures (e.g., Saklofske & McKerracher, 1982; Silva & McGee, 1984), highlighting this need. This study was undertaken to provide normative, reliability, and validity data for the ABS, employing local samples of mentally retarded, and psychotic, hospitalized patients.

## Method

*Subjects*

Subjects were 646 patients at Cherry Farm Hospital, Dunedin, this being the entire population at the time of assessment between July 1981 and February 1982. Sufficient numbers were available to construct norms for patients diagnosed according to the criteria of the *Diagnostic and Statistical Manual of Mental Disorders,* III, (American Psychiatric Association, 1980) as either mentally retarded (N = 210) or having a psychotic disorder (N = 110). Approximately half of the mentally retarded patients (45%) were estimated to be moderately mentally retarded, while the remaining patients were equally divided between mildly retarded (27%) and severely retarded (28%) classifications (Howell, 1984). Demographic characteristics for these diagnostic groups (subgrouped by age) are presented in Table 1, where it can be seen that they comprise chronically hospitalized patients, with a slightly higher overall proportion of males (60% approximately) than females. A random sample of 36 patients was selected from the total hospital sample for retesting. Their demographic characteristics are also presented in Table 1 where it can be seen that this group also was a chronically hospitalized (and predominantly older) subsample. The retest sample included primarily patients diagnosed as psychotically disordered (N = 18), or mentally

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[2] Address correspondence and request for reprints to Hamish P.D. Godfrey, Psychology Department, University of Otago, P.O. Box 56, Dunedin. Tables of T-Scores for the diagnostic and age grouping indicated in Tables 4 and 5, may be obtained from Hamish P.D. Godfrey.

Table 1: *Demographic Characteristics of Mentally Retarded Patients, Psychotic Patients, and the Retest Sample.*

| | Age Group | N | Age | Length of Hospitalization* | Number of Admissions | Sex |
|---|---|---|---|---|---|---|
| | | | Mean (S.D.) | Mean (S.D.) | Mean (S.D.) | M:F |
| *Retarded Patients* | 19-29 years | 55 | 23.4 (3.1) | 9.5 (6.7) | 1.8 (1.7) | 41:14 |
| | 30-49 years | 79 | 39.4 (6.4) | 16.2 (9.7) | 1.6 (1.3) | 38:41 |
| | 50-69 years | 76 | 57.9 (5.3) | 22.4 (12.4) | 1.5 (1.3) | 43:33 |
| *Psychotic Patients* | 50-69 years | 58 | 59.6 (5.7) | 19.5 (14.3) | 2.4 (3.0) | 40:18 |
| | 70+ years | 52 | 75.6 (4.7) | 28.8 (17.8) | 1.6 (1.0) | 32:20 |
| *Retest Sample* | | 35 | 55.0 (12.0) | 22.3 (14.0) | 2.0 (2.1) | 23:12 |

*Note:* * Length of hospitalization = years in hospital at time of rating.

retarded (N = 8), with the remaining 9 patients having a variety of psychiatric diagnoses.

*Measures and Procedure*

All patients were rated using the standard version of the AAMD Adaptive Behaviour Scale (Nihira et al, 1974). Ninety-three nurses completed ratings, each nurse completing on average seven ABS protocols, with the majority of ratings (71%) being completed by 30 charge nurses. The following instructions were issued to all charge nurses at a project meeting prior to data collection:

(a) Where possible, charge nurses were asked to rate the patients themselves, however, if they were unsure of some details they were instructed to seek confirmation from other staff members.

(b) If charge nurses were unable to rate a patient then a nurse who knew the patient well was asked to complete the rating, and instructed regarding the administration of the scale.

(c) It was stressed that nurses were to rate the patients as they were currently functioning.

The study organiser visited hospital villas every few weeks while the assessments were being completed to discuss and rectify any problems which arose.

The retest assessments were obtained by rating all patients in one villa on two occasions. The second ratings are always made by one of the four original raters for this group of patients, the average retest-interval being two months.

Table 2: *Test-Retest Reliability Coefficients for Adaptive Behaviour Scale Subscales.*

| *Domain* | *Alpha Coefficient (N=35)* |
|---|---|
| *Part 1:* | |
| Independent Functioning | .94 |
| Physical Development | .86 |
| Economic Activity | .72 |
| Language Development | .75 |
| Numbers and Time | .88 |
| Domestic Activity | .68 |
| Vocational Activity | .69 |
| Self-Direction | .87 |
| Responsibility | .76 |
| Socialization | .73 |
| *Part 2:* | |
| Violent Behaviour | .47 |
| Antisocial Behaviour | .70 |
| Rebellious Behaviour | .48 |
| Untrustworthy Behaviour | .33 |
| Withdrawal | .61 |
| Stereotyped Behaviour | .66 |
| Inappropriate Manners | .47 |
| Unacceptable Vocal Habits | .68 |
| Eccentric Habits | .65 |
| Self-Abuse Behaviour | .59 |
| Hyperactive Tendencies | .78 |
| Sexually Aberrant Behaviour | .38 |
| Psychological Disturbance | .54 |
| Medication | .59 |

## Results

*Reliability*

Test-retest reliability coefficients are presented in Table 2, and indicate that reliability for Part 1 was generally acceptable with only two subscales coefficients falling below .70. Reliability for Part 2 was unacceptably low for many scales with only two coefficeints equalling or exceeding .70.

*Normative Data*

The normative data for the mentally retarded group are presented in Table 3, and for the psychotic group in Table 4. Age groupings were chosen to match those used in the scale manual (Nihira et al., 1974), and only age

groupings with sufficient numbers are reported. In order to examine the comparability of the New Zealand and American norms, decile scores were calculated for the Independent Functioning and Psychological Disturbance subscales for the mentally retarded patients, and are reported in Table 5 along with the decile scores for the same age groupings for the American sample of retardates (Nihira et al., 1974). Scores presented for the Independent Functioning subscales indicate that the New Zealand sample was rated as functioning as a lower level than the American sample. Similarly, the New Zealand sample was rated as displaying a higher level of Psychological Disturbance than the American sample (Table 5). These trends were consistent across other Part 1 and 2 subscales for mentally retarded patients.

*Factor Analysis*

The data from each of the two diagnostic subgroups were factor analysed using the Factor subprogramme of the Statistical Package for the Social Sciences (Nie, 1983). The Principal Components method of extraction (which produces factors which are linear combinations of the original variables) was adopted, in order to maintain comparability with other studies, and because of the wide variation between communalities (Gorsuch, 1974). Cattell's scree-break criterion suggested that three factors should be rotated for each sample. The three factor solution was rotated to the Kaiser Varimax criterion and factor loadings are presented for the mentally retarded and psychotic groups respectively, in Tables 6 and 7. For the mentally retarded group, the first factor, labelled Personal Independence, accounted for 32.6% of the total variance. All of the Part 1 subscales loaded on this factor, with a negative loading for the Part 2 Withdrawal subscale and the Part 2 Stereotyped Behaviour subscale. The Part 2 maladaptive subscales loaded on the second and third factors labelled Social and Personal Maladaption. The Social Maladaption factor accounted for 15.2% of the variance while the Personal

Table 3: *Means and Standard Deviations for the Adaptive Behaviour Scale Subscales for the 19-29, 30-49, and 50-69 Age Categories for the Mentally Retarded Patients.*

| | *Age Group* | | |
|---|---|---|---|
| *Domain* | *19-29 (N=55)* Mean (s.d.) | *30-49 (N= 79)* Mean (s.d.) | *50-69 (N=76)* Mean (s.d.) |
| *Part 1:* | | | |
| Independent Functioning | 51.2 (32.2) | 57.3 (29.1) | 63.9 (21.3) |
| Physical Development | 18.0 (5.7) | 18.4 (4.5) | 17.9 (4.1) |
| Economic Activity | 3.7 (5.2) | 4.4 (5.0) | 4.3 (4.5) |
| Language Development | 13.7 (11.9) | 17.1 (11.5) | 18.5 (10.8) |
| Numbers and Time | 3.1 (4.6) | 4.3 (4.4) | 4.7 (4.6) |
| Domestic Activity | 3.9 (5.6) | 4.9 (5.8) | 4.4 (4.6) |
| Vocational Activity | 2.6 (2.2) | 4.0 (4.4) | 4.1 (4.3) |
| Self-Direction | 6.5 (6.6) | 8.8 (6.5) | 9.3 (6.0) |
| Responsibility | 1.4 (2.1) | 2.2 (2.0) | 2.2 (2.0) |
| Socialization | 9.8 (8.1) | 12.0 (7.7) | 12.6 (7.5) |
| *Part 2:* | | | |
| Violent Behaviour | 6.3 (6.5) | 3.7 (4.5) | 1.8 (2.9) |
| Antisocial Behaviour | 5.3 (7.4) | 5.3 (6.7) | 3.1 (4.6) |
| Rebellious Behaviour | 4.4 (5.1) | 4.4 (5.0) | 3.5 (4.8) |
| Untrustworthy Behaviour | 0.6 (1.4) | 1.2 (1.9) | 0.9 (2.2) |
| Withdrawal | 4.9 (4.7) | 4.2 (5.0) | 5.1 (4.9) |
| Stereotyped Behaviour | 2.9 (3.4) | 2.0 (2.3) | 1.1 (2.0) |
| Inappropriate Behaviour | 1.0 (1.7) | 1.6 (2.6) | 0.8 (1.8) |
| Unacceptable Behaviour | 2.0 (2.2) | 2.0 (1.9) | 1.4 (2.1) |
| Eccentric Habits | 3.4 (5.0) | 2.8 (3.4) | 2.1 (2.9) |
| Self-Abuse Behaviour | 1.4 (2.5) | 1.0 (1.9) | 0.3 (1.7) |
| Hyperactive Tendencies | 2.0 (2.5) | 1.4 (1.9) | 0.8 (1.5) |
| Sexually Abberant Behaviour | 0.9 (1.9) | 1.5 (3.1) | 0.8 (2.1) |
| Psychological Disturbances | 5.5 (7.9) | 6.0 (7.0) | 4.4 (6.2) |
| Medication | 1.8 (1.1) | 2.1 (1.5) | 1.3 (1.1) |

Table 4: *Means and Standard Deviations for the Adaptive Behaviour Scale Subscales for the 50-69 and 70+ Age Categories for the Psychotic Patients.*

| *Domain* | *Age Group* 50-69 (N=58) Mean (s.d.) | 70+ (N=52) Mean (s.d.) |
|---|---|---|
| *Part 1* | | |
| Independent Functioning | 78.8 (20.0) | 60.0 (21.0) |
| Physical Development | 20.5 (20.0) | 17.1 (3.7) |
| Economic Activity | 8.7 (5.6) | 3.1 (5.3) |
| Language Development | 27.9 (10.5) | 19.9 (11.0) |
| Numbers and Time | 9.7 (4.0) | 6.4 (4.9) |
| Domestic Activity | 7.4 (6.0) | 2.5 (4.0) |
| Vocational Activity | 4.9 (4.4) | 1.7 (3.7) |
| Self-Direction | 10.9 (5.0) | 7.7 (5.3) |
| Responsibility | 3.3 (1.9) | 1.6 (1.9) |
| Socialization | 14.6 (7.1) | 9.5 (7.2) |
| *Part 2* | | |
| Violent Behaviour | 1.6 (2.9) | 0.9 (1.6) |
| Antisocial Behaviour | 3.4 (6.7) | 1.3 (2.4) |
| Rebellious Behaviour | 3.7 (5.2) | 2.5 (3.4) |
| Untrustworthy Behaviour | 0.7 (1.7) | 0.4 (1.1) |
| Withdrawal | 9.1 (6.3) | 8.4 (6.6) |
| Stereotyped Behaviour | 1.8 (2.7) | 1.2 (1.9) |
| Inappropriate Manners | 0.4 (0.8) | 0.1 (0.4) |
| Unacceptable Vocal Habits | 1.4 (2.4) | 0.9 (1.7) |
| Eccentric Habits | 2.1 (2.8) | 1.7 (2.0) |
| Self-Abusive Behaviour | 0.1 (0.5) | 0.3 (1.0) |
| Hyperactive Tendencies | 0.8 (1.5) | 0.5 (1.4) |
| Sexually Aberrant Behaviour | 0.6 (2.2) | 0.6 (2.7) |
| Psychological Disturbances | 5.0 (6.5) | 1.7 (2.9) |
| Medication | 2.2 (1.0) | 2.0 (1.2) |

Table 5: *Decile Scores for Independent Functioning and Psychological Disturbance Subscales for North American (N.A.) and New Zealand (N.Z.) Mentally Retarded Patients.*

| | *Independent Functioning* | | | | | |
|---|---|---|---|---|---|---|
| | *19-29 Age Group* | | *30-49 Age Group* | | *50-69 Age Group* | |
| *Decile* | *N.A.* | *N.Z.* | *N.A.* | *N.Z.* | *N.A.* | *N.Z.* |
| 9 | 103 | 99 | 101 | 91 | 101 | 88 |
| 8 | 100 | 83 | 98 | 85 | 97 | 84 |
| 7 | 95 | 75 | 95 | 79 | 94 | 79 |
| 6 | 91 | 66 | 91 | 72 | 90 | 72 |
| 5 | 87 | 53 | 86 | 64 | 86 | 66 |
| 4 | 81 | 32 | 80 | 53 | 83 | 59 |
| 3 | 75 | 24 | 73 | 37 | 77 | 54 |
| 2 | 63 | 17 | 63 | 22 | 68 | 48 |
| 1 | 44 | 12 | 49 | 15 | 47 | 29 |

| | *Psychological Disturbance* | | | | | |
|---|---|---|---|---|---|---|
| | *19-29 Age Group* | | *30-49 Age Group* | | *50-69 Age Group* | |
| *Decile* | *N.A.* | *N.Z.* | *N.A.* | *N.Z.* | *N.A.* | *N.Z.* |
| 9 | 17 | 19 | 12 | 16 | 9 | 14 |
| 8 | 10 | 8 | 8 | 11 | 5 | 9 |
| 7 | 7 | 6 | 5 | 7 | 3 | 5 |
| 6 | 4 | 4 | 3 | 5 | 2 | 3 |
| 5 | 2 | 2 | 2 | 4 | 1 | 2 |
| 4 | 1 | | | 3 | 0 | 1 |
| 3 | 0 | 1 | 0 | 1 | | |
| 2 | | | | | | |
| 1 | | | | | | |

Table 6: *Factor Loadings for Adaptive Behaviour Scale Subscales for Mentally Retarded Patients.*

| *Factor/Domain* | *1* | *2* | *3* |
|---|---|---|---|
| 1. *Personal Independence* | | | |
| Independent Functioning | .88 | | |
| Physical Development | .68 | | |
| Economic Activity | .85 | | |
| Language Development | .83 | | |
| Numbers and Time | .81 | | |
| Domestic Activity | .88 | | |
| Vocational Activity | .84 | | |
| Self Direction | .90 | | |
| Responsibility | .89 | | |
| Socialization | .88 | | |
| Withdrawal | -.44 | | |
| 2. *Social Maladaption* | | | |
| Violent Behaviour | | .52 | .50 |
| Antisocial Behaviour | | .76 | .31 |
| Rebellious Behaviour | | .80 | |
| Untrustworthy Behaviour | | .63 | |
| Inappropriate Behaviour | | .59 | |
| Unacceptable Vocal Habits | | .48 | .37 |
| Sexually Aberrant Behaviour | | .48 | |
| Psychological Disturbance | | .75 | |
| 3. *Personal Maladaption* | | | |
| Stereotyped behaviour | -.36 | | .70 |
| Eccentric Habits | | | .66 |
| Self-Abuse Behaviour | | | .71 |
| Hyperactive | | | .71 |

Table 7: *Factor Loadings for Adaptive Behaviour Scale Subscales for Psychotic Patients.*

| *Factor/Domain* | *1* | *2* | *3* |
|---|---|---|---|
| 1. *Personal Independence* | | | |
| Independent Functioning | .90 | | |
| Physical Development | .68 | | |
| Economic Activity | .85 | | |
| Language Development | .86 | | |
| Numbers and Time | .81 | | |
| Domestic Activity | .84 | | |
| Vocational Activity | .74 | | |
| Self Direction | .84 | | |
| Responsibility | .87 | | |
| Socialization | .87 | | |
| 2. *Social Maladaption* | | | |
| Violent Behaviour | | .71 | |
| Antisocial Behaviour | | .90 | |
| Rebellious Behaviour | | .81 | |
| Untrustworthy Behaviour | | .85 | |
| Withdrawal | | -.38 | .30 |
| Sexually Aberrant Behaviour | | .39 | |
| Psychological Disturbance | .31 | .74 | |
| 3. *Personal Maladaption* | | | |
| Stereotyped Behaviour | | -.31 | .81 |
| Inappropriate Manners | | .41 | .46 |
| Unacceptable Vocal Habits | | | .50 |
| Eccentric Habits | | | .69 |
| Self-Abuse Behaviour | | | .37 |
| Hyperactive | | .53 | .54 |

Maladaption factor accounted for a further 11.9% of the total variance. A very similar factor pattern was found for the psychotic patient group, the factor loadings being reported in Table 7. The three factors accounted respectively for 29.8%, 17.9%, and 10.8% of the total variance.

## Discussion

The reliability data reported confirm the findings of earlier studies which have indicated higher reliabilities for Part 1 of the scale, with Part 2 having low to moderate reliability (Fogelman, 1975; Isett & Spreat, 1979; Mayfield, Forman, & Nagle, 1984; Spreat, 1982a; Stack, 1984). The finding of lower reliability for Part 2 of the ABS may limit the utility of Part 2 subscales (c.f., Spreat, 1982b). The normative data presented indicated a discrepancy between the original American sample (Nihira et al., 1974) and the New Zealand sample of mentally retarded, institutionalized patients, highlighting the need for local norms. New Zealand users of the Adaptive Behaviour Scale should be cautious regarding interpretation based on the American norms. Furthermore, differences between hospitals within New Zealand (e.g., admission criteria) may mean that these norms based on ratings of inpatients at Cherry Farm Hospital, may not be appropriate for use in all other inpatient settings. The provision of norms for two age groupings of psychotic patients widens the potential utility of this scale to another commonly hospitalized diagnostic group.

The principal components analysis of the subscale scores for the mentally retarded group, produced findings strikingly consistent with previous studies (Nihira, 1969a; 1969b), lending support to the construct validity of the scale. The Personal Independence factor has been reported by Arndt (1981), Nihira (1969a; 1969b), and Spreat (1980), while the Social and Personal Maladaption factors have been reported by Nihira (1969a; 1969b). The similarity of the factor structure for the psychotic group supports the validity of this measure with psychotic patients.

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