Computer-aided reporting of the results of mental retardation evaluations

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The MR Report Assistant is designed to perform the types of routine tasks that computers do well, while freeing the skilled psychologist to concentrate on tasks that are best done by knowledgeable humans. The Assistant is intended for reporting the results of psychological evaluation of known or suspected mental retardation patients using a standard battery consisting of the WAIS-R, the Vineland, and an interview. The program encourages the inclusion of additional information by writing to a disk file suitable for editing with a word processor, rather than directly to a printer. Research and training are encouraged by making the program available to qualified persons at no charge.

Examination of psychological publications suggests increasing availability of programs to assist in interpreting psychological test data. While test interpretation and report writing programs can greatly increase the psychologist's productivity, Matarazzo (1985) has expressed concern that computer-generated reports may be used "in isolation without further reference to the clinical history of the individual."

The MR Report Assistant incorporates the user's observations and requires inclusion of a limited history. Furthermore, the program does not provide summaries or conclusions other than those input by the psychologist or based on the reliability of the differences among the data. It functions largely at a descriptive level, identifying how the patient is perceived by the examiner and how the patient compares with the standardized measures used. It ensures that certain, although by no means all, comparisons are consistently made. It also ensures that certain errors of omission and commission are not made.

Target Audience

Although the intended user is not always clearly identified, many commercial programs appear to target service providers. Matarazzo (1985, 1986) has expressed concern that scoring services and microcomputer programs are likely to be used by professionals with insufficient training in testing to appreciate the limitations of current computer-generated interpretations. Fowler (1985) points out that there are no clear standards regarding who is qualified to use psychological tests, and that publishers have traditionally not limited their sales to psychologists, let alone to psychologists qualified in their use. The Assistant is intended to be used as a training tool for future psychologists. It can also be used by psychologists already com-

petent with the tests. The expectation is that graduate students and practicing psychologists will be aware of the limitations of any computer-generated interpretation, thereby reducing the likelihood of uncritical acceptance of program output (Honaker, Hector, & Harrell, 1986).

Information Provided

In discussing automated MMPI reports, Moreland (1985) has suggested that identifying the studies that are the basis of the interpretive statements contained in computer-generated reports would allow potential users to make better informed decisions about using these reports. Similarly, the American Psychological Association's (1986) guidelines for developers of interpretive programs states that adequate information about the system should be made available to allow peer review. Statements in the Assistant are based upon Silverstein's (1982) criteria for reliable differences in age-scaled subtest scores for the WAIS-R and the Vineland manual (Sparrow, Balla, & Cicchetti, 1984) for the Vineland.

Use

The MR Assistant performs only a single function, doing so in a straightforward manner. Brief instructions are presented on screen, after which the user is prompted for information. Once information is input, review screens (see Appendix A) offer an opportunity to make revisions. Following that, a narrative report is written to an ASCII file, which the psychologist must load into a word processor for editing and printing.

The program begins by outlining the qualifications and requirements for use (Screen 1). It then gives instructions for saving the output and asks the user to identify the output file and path (Screen 2). Following this, the user is prompted for demographic and historical data regarding the patient (Screens 3 and 4). Once the background information has been entered, the Assistant presents a review screen, which summarizes this information and al-

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lows for changing fields one item at a time (Screen 5). The psychologist then enters two screens of observations made during the evaluation (Screens 6 and 7). A second review screen summarizes the observations and again allows the user to change any of the fields (Screen 8). At this point, the psychologist is prompted to enter the WAIS-R age-scaled scores, scaled scores, and IQs (Screen 9). An opportunity is provided to review and, if necessary, change any of these scores (Screen 10). The Vineland scores are then entered (Screen 11) and reviewed (Screen 12). Finally, recommendations, referrals, and diagnosis are entered (Screen 13) and then reviewed (Screen 14).

At this point, the report is written to the ASCII file named by the psychologist earlier, with instructions to load the report into a word processor. A sample report, as produced by the Assistant, is contained in Appendix B.

The Assistant is written in Borland C++, and requires an IBM PC with at least 120K of available memory and DOS Version 2.x or above. Either a text or a graphics adaptor and monitor may be used.

Availability

The Assistant is available at no charge to psychologists who agree to abide by the author's conditions for its use. Potential users must state in writing that they hold a doctorate in clinical or professional psychology from a regionally accredited university or school of professional psychology, that they are licensed at the independent practice level in state X, and that they are competent in the use and interpretation of the measures involved. Furthermore, they must state that they will use the Assistant only for noncommercial purposes and that all output from the program will be rewritten under their supervision, in order to include additional information about the patients, as well as summaries and interpretations. Additionally, they are to use the program only for persons already identified as, or suspected of being, mentally retarded. Although they may copy the program for such use under their personal supervision, they may not distribute it to other persons, may not modify the program, and may not include any or all of it in any other program. Finally, they should send a disk formatted for their system, with a self-addressed, stamped disk mailer to the author.

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APPENDIX A Screens

Screen 1

MR REPORT ASSISTANT

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This program may be used only by qualified psychologists, licensed at the independent practice level. The output from this program is to be carefully reviewed for accuracy. The user is expected to edit and substantially add to the output from this program information and clinical inferences about the subject.

Screen 2

MR REPORT ASSISTANT

The program will send output to a file of your choice. You may then edit that file with your own word processor.

You must tell the program on what drive to save the file, whether a, b, c, or d, depending on your machine.

You must also tell the program what name to give the file, e.g., the patient's name. If your word processor uses a particular file extension, be sure to include that in the name. For example, if your patient is Mr. Jones and your word processor uses the extension .DOC on files, you might save the output as:

a:jones.doc or as c:\document\jones.doc

Name of drive and file to use for output: c:jones.doc

Screen 3

BACKGROUND INFORMATION

Referred by: S. Jones, M.D.
 Referral reason: (X)1=guardianship ()2=workshop
 ()3=eligibility for services ()4=parenting
 Title: (X)1=Mr. ()2=Mrs. ()3=Ms. Age: 35 Birthday: 04-14-58
 First Name: William Last Name: Brown
 Sex: (X)1=male ()2=female MR#:123456789 Exam Date: 09-12-92
 Ethnic: (X)1=white ()2=black ()3=Asian ()4=Latino ()5=Native Am
 Lives: (X)1=group home ()2=family ()3=independently ()4=friends
 Accompanied by: (X)1=social worker ()2=home provider ()3=parents
 ()4=mother ()5=father ()6=brother
 ()7=sister ()8=family friend ()9=no one
 Companion's name: A. Smith, MSW
 Interview: (X)1=responded to Vineland ()2=left w/o Vineland
 ()3=had no knowledge of patient
 Reason to question information: ()1=yes (X)2=no

Screen 4

BACKGROUND INFORMATION 2

Pregnancy-birth complications: () 1=? (X)2=no () 3=yes
 Milestones delayed: () 1=? ()2=no () 3=delay (X)4=significant delay
 Medical history: () 1=brain infection (X)2=seizures
 () 3=brain trauma ()4=no ()5=unknown
 Identified MR: (X)1=yes ()2=no
 Age identified MR: () 1=? (X)2=birth ()3=early
 Education: (X)1=special ed ()2=regular classes ()3=none ()4=?
 Until age/grade: age 25 Paid job: (X)1=yes ()2=no
 Worked as (a/an): a bagger in a grocery store
 Raised in: Chicago

Screen 5

BACKGROUND REVIEW

1] Mr.	2] William	3] Brown
4] age 35		5] white
6] male		7] MRNO 123456789
8] exam 9/12/92		
9] lives in a group home	10] raised Chicago	
11] complications none	12] development delayed	
13] medical history not reported		
14] identified MR	15] at an early age	
16] special education	17] age 25	
18] has never worked	19]	
20] accompanied social worker	21] B. Sharpe, MSW	
22] completed Vineland		
23] question informant's info no		
25] referred by S. Jones, M.D.	26] referred for guardianship	

Press the number of any one item which you wish to change.
 Press <Enter> without a number if you have no changes to make.

Appendix A (Continued)

Screen 6

OBSERVATIONS

Grooming: () 1=good (X) 2=adequate () 3=poor
 Hygiene: () 1=good () 2=adequate (X) 3=poor
 Dress: () 1=neat () 2=adequate (X) 3=shabby
 (X) 4=conventional () 5=unconventional
 Posture: () 1=rigid (X) 2=slouched () 3=unremarkable
 Walked: (X) 1=w/o aid () 2=with aid () 3=no
 Gait: (X) 1=unremark () 2=ataxic () 3=shuffling
 () 4=slow () 5=rapid
 Motor act: () 1=agitated () 2=normal (X) 3=slowed
 Tremor: (X) 1=absent () 2=mild () 3=moderate () 4=marked
 Tics: (X) 1=absent () 2=mild () 3=moderate () 4=marked
 Stereotype: (X) 1=absent () 2=mild () 3=moderate () 4=marked
 Affect: (X) 1=wide () 2=norm lim (X) 3=constrict () 4=absent
 Mood: () 1=euphoric () 2=cheerful () 3=composed (X) 4=anxious
 () 5=fearful () 6=depressed () 7=suspicious () 8=hostile
 () 9=unknown
 Speech: () 1=absent (X) 2=slowed () 3=fluent () 4=dysarthric
 () 5=dysprosodic () 6=paraphasic () 7=scholastic

Screen 7

OBSERVATIONS 2

Speech: () 1=spontaneous (X) 2=rehearsed () 3=verbose
 () 4=pressured () 5=neologisms
 Communication: (X) 1=OK () 2=none () 3=random () 4=stereotyped
 Internal Stimuli: () 1=yes (X) 2=no
 Motivation: () 1=high (X) 2=well () 3=moderate
 () 4=intermittent () 5=poor
 Attentive: (X) 1=attentive () 2=intermit distracted
 () 3=distracted () 4=ignored
 Difficulty understanding: (X) 1=no () 2=limited () 3=considerable
 Cooperative: (X) 1=cooperative () 2=intermittent () 3=uncooperative
 Accuracy: () 1=both accurate () 2=overestimate both
 () 3=underestimate both () 4=WAIS accurate
 () 5=Vineland accurate
 Examiner name and credentials: D. Smith, Ph.D.

Screen 8

OBSERVATIONS REVIEW

1) grooming good 2) hygiene good
 3) dress neat 4) posture slouched
 5) walked without assistance 6) gait unremarkable
 7) within normal limits 8) tremor absent
 9) tics absent 10) stereotype absent
 11) affect constricted 12) mood cheerful
 13) speech slowed 14) speech rehearsed
 15) responded appropriately 16) did not appear hallucinating
 17) well motivated
 18) was attentive
 19) no difficulty understanding 20) cooperative
 21) both accurate
 22) D. Smith, Ph.D. 23)
 24) 25)
 26) save report in c:test.doc 27) informant B. Sharpe, MSW

Press the number of any one item which you wish to change.
 Press <Enter> without a number if you have no changes to make.

Screen 9

WAIS-R SCORES
 Age Scaled Scores

Information age scaled: 4 Picture Completion age scaled: 4
 Digit Span age scaled: 4 Picture Arrangement age scaled: 4
 Vocabulary age scaled: 4 Block Design age scaled: 4
 Arithmetic age scaled: 4 Object Assembly age scaled: 4
 Comprehension age scaled: 4 Digit Symbol age scaled: 4
 Similarities age scaled: 4

Scaled Scores

Information scaled: 4 Picture Completion scaled: 4
 Digit Span scaled: 4 Picture Arrangement scaled: 4
 Vocabulary scaled: 4 Block Design scaled: 4
 Arithmetic scaled: 4 Object Assembly scaled: 4
 Comprehension scaled: 4 Digit Symbol scaled: 4
 Similarities scaled: 4

Enter 151 for > 150
 VIQ: 54 PIQ: 54 FSIQ: 54

Screen 10

WAIS-R SCORES REVIEW

Verbal Tests	Age Scaled	Performance Tests	Age Scaled
1) Information	4	7) Picture Completion	4
2) Digit Span	4	8) Picture Arrangement	4
3) Vocabulary	4	9) Block Design	4
4) Arithmetic	4	10) Object Assembly	4
5) Comprehension	4	11) Digit Symbol	4
6) Similarities	4		

Verbal Tests	Scaled	Performance Tests	Scaled
1) Information	4	7) Picture Completion	4
2) Digit Span	4	8) Picture Arrangement	4
3) Vocabulary	4	9) Block Design	4
4) Arithmetic	4	10) Object Assembly	4
5) Comprehension	4	11) Digit Symbol	4
6) Similarities	4		
23) VIQ	54	24) PIQ	54
		25) FSIQ	54

Screen 11

VINELAND SCORES

Enter 19 for less than 20

Communication standard score	21
Daily Living Skills standard score	21
Socialization standard score	21
Maladaptive Behavior percentile	21
Composite standard score	21

Screen 12

VINELAND SCORES REVIEW

Domain	Score
1) Communication	21
2) Daily Living Skills	21
3) Socialization	21
4) Maladaptive Behavior	21
5) Composite	21

Press the number of any one item which you wish to change.
 Press <Enter> without a number if you have no changes to make.

Screen 13

DIAGNOSIS

Recommend: () 1=guardianship (X) 2=workshop () 3=eligibility
 () 4=1 & 2 () 5=1 & 3 () 6=2 & 3
 () 7=1, 2 & 3
 Referral: () 1=none () 2=physical () 3=neurological
 (X) 4=eye exam () 5=hearing exam () 6=psychiatric
 () 7=speech () 8=psychological
 Diagnosis: () 1=mild MR (X) 2=moderate MR () 3=severe MR
 () 4=profound MR () 5=unspecified MR () 6=borderline
 () 7=defer () 8=none

Screen 14

DIAGNOSIS REVIEW

1) recommend guardianship
 2) referral none
 3) diagnosis 318.00 Moderate Mental Retardation

Press the number of any one item which you wish to change.
 Press <Enter> without a number if you have no changes to make.

APPENDIX B

PSYCHOLOGICAL EVALUATION

Patient: William Smith
Sex: male

MRNO: 123456789
Exam Date: 06/25/92

Reason for Referral

William Smith was referred for evaluation of intellectual and adaptive functioning by his Department of Social Service worker. This information is necessary in order to assist in decisions regarding guardianship.

Instruments Used

Wechsler Adult Intelligence Scale - Revised (WAIS-R)
Vineland Adaptive Behavior Scales
Clinical Interview

Background

William Smith is a 34-year-old white male who is currently living in a group home. He was accompanied to the evaluation by his home worker, Ray Brown, who was interviewed for the Vineland, and provided information regarding Mr. Smith. There were no reported complications involving the client's gestation and birth. Developmental milestones were reported to have been significantly delayed. His medical history is significant for seizures. Mr. Smith was identified as mentally retarded at age three. He attended special education classes until age 25. He has never held paid employment.

Behavioral Observations

Mr. Smith's grooming was adequate, hygiene was adequate, and dress was neat. His posture was slouched, he walked without assistance and gait was ataxic, motor activity was slowed, tremor was absent, tics were absent, and stereotyped behavior was mild. Range of affect was constricted and mood was anxious. His speech was dysarthric and spontaneous, he responded appropriately to attempts to communicate, and did not appear to be responding to internal stimuli. He appeared well motivated, was intermittently distracted, appeared to have no difficulty understanding instructions, and was cooperative with the evaluation, which is believed to accurately assess both his current cognitive and adaptive functioning.

Test Results

Wechsler Adult Intelligence Scale - Revised

Verbal Tests	Scaled Scores	Performance Tests	Scaled Scores
Information	1 w	Picture Completion	4
Digit Span	7 s	Picture Arrangement	5
Vocabulary	4	Block Design	3
Arithmetic	3	Object Assembly	4
Comprehension	4	Digit Symbol	3
Similarities	3		

Full Scale IQ: 63

Verbal IQ: 65

Performance IQ: 64

Vineland Adaptive Behavior Scales

Domain	Standard Score
Communication	11
Daily Living Skills	34 s
Socialization	11
Adaptive Behavior Composite:	32

Mr. Smith performed within the mildly retarded range of intellectual functioning overall, achieving a full scale IQ of 63. Verbal skills fell within the mildly retarded range, while visual-motor skills were within the mildly retarded range, with no reliable difference in the overall verbal and visual-motor skill levels measured by the WAIS-R. Performance across the subtests indicates significant relative strengths and weaknesses among the specific skills sampled. Reliable strengths are marked by an "s" and include attention and short term verbal memory. Reliable weaknesses are marked by a "w" and include fund of common cultural information.

Appendix B (continued)

Ray Brown served as informant on the Vineland Adaptive Behavior Scales. There is no reason to question the information provided regarding Mr. Smith's adaptive behavior. He was reported to perform within the low range of coping with the demands of the natural and social environment overall. Communications skills fell within the low range, daily living skills fell within the low range, and socialization skills fell within the low range of adaptive behavior, indicating a reliable difference in the levels of adaptive behavior sampled by the Vineland. Reliable strengths are marked by an "s" and include self-care and daily tasks. He is reported to exhibit an intermediate level of maladaptive behavior.

Summary and Recommendations

William Smith performed in the mildly retarded range of intellectual functioning, and was reported to perform in the low range of adaptive functioning during this evaluation. His performance suggests the need for a guardian. It is recommended that Mr. Smith be scheduled for a speech evaluation for possible assistance with language.

Diagnosis: 317 Mild Mental Retardation

John Doe, M.A.

Barry A. Tanner, Ph.D.