



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Developing and Revising the Hierarchic Dementia Scale

Presented by Terrie Simpson and
Dr Dolly Dastoor



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

HIERARCHIC DEMENTIA SCALE- GENESIS

Dr Dolly Dastoor Ph.D
McGill University, Montreal Canada



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

developed by

Dr. Martin **COLE** & Dr. Dolly **DASTOOR**



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

- EARLY '70S - VERY LITTLE KNOWN HOW TO DEAL WITH DEMENTIA
- FEW SCALES AVAILABLE WITH LIMITED USEFULNESS Folstein (1975) Mattis (1976)



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

STUDY OF DEMENTIA REQUIRES INSTRUMENT

- **THAT IS RELIABLE, VALID, SENSITIVE TO CHANGE, SAFE, INEXPENSIVE & EASY TO USE**
- **ABLE TO DESCRIBE THE NATURAL HISTORY OF THE DISEASE PROCESS, IDENTIFY PROGNOSTIC FACTORS & COMPARE EFFICACIES OF TREATMENT**



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

**DIFFICULTIES IN ASSESSING
MENTAL PERFORMANCE IN DEMENTIA PATIENTS**

VARIABILITY

FATIGABILITY

LACK OF MOTIVATION

MOTOR AND SENSORY HANDICAPS

RANGE OF FUNCTIONS

GLOBALITY



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

HIERARCHIC ORGANIZATION OF MENTAL FUNCTIONS

JACKSON (1968) – MOTOR FUNCTIONS

LURIA (1966) – HIGHER MENTAL FUNCTIONS

**PIAGET THE HIERARCHY OF HUMAN
COGNITIVE DEVELOPMENT**



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

AS DEMENTIA PROGRESSES, THERE IS CONSISTENT HIERARCHIC DECLINE IN MENTAL FUNCTION

- **DE AJURIAGUERRA ET AL. (1964) COGNITIVE DECLINE IN DEMENTIA APPROXIMATES PIAGET'S DEVELOPMENTAL STAGES IN REVERSE**
- **CONSTANTINIDIS & RICHARD (1978) DECLINE IN NEUROPSYCHOLOGICAL AND NEUROLOGICAL FUNCTIONS FOLLOW A SIMILAR HIERARCHIC DECLINE IN THE DECLINE OF LANGUAGE FUNCTIONS:**
 - e.g. **NOMINAL APHASIA PRECEDES THE APPEARANCE OF PARAPHASIA WHICH PRECEDES APPEARANCE OF DEFORMED WORDS OR JARGON**
- **EXTENDED TO MEASUREMENT OF COGNITIVE IMPAIRMENT IN DEMENTIA, RESULTING IN DEVELOPMENT OF HIERARCHIC DEMENTIA SCALE**



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

BUT WHAT IS A HIERARCHY?

HIERARCHY OF VALUES

ACE

KING

QUEEN

JACK



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

HIERACHY OF COGNITIVE DEVELOPMENT

FORMAL OPERATIVE STAGE

CONCRETE OPERATIVE STAGE

PRE-OPERATIVE STAGE

SENSORY- MOTOR STAGE

(most primitive stage of development)



DEMENTIA
TRAINING
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

MODEL OF COGNITIVE DECLINE IN DEMENTIA

HIERARCHICAL ORGANIZATION

AND DECLINE OF MENTAL FUNCTIONS

UTILISED IN THE CONSTRUCTION OF

HIERARCHIC DEMENTIA SCALE (HDS)



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

FUNCTIONS TO BE TESTED

1. Orienting Reflexes
2. Developmental Behaviour
3. Looking Behaviour
4. Orientation
5. Remote Memory (personal)
6. Registrations
7. Recent Memory
8. Ideational Praxic
9. Ideomotor Praxic
10. Graphic Praxic
11. Constructional Praxic
12. Concentration
13. Denomination
14. Designation



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

FUNCTIONS TO BE TESTED

- | | |
|--------------------------|---------------------|
| 15. Verbal Comprehension | 21. Calculation |
| Written Comprehension | 22. Problem Solving |
| 16. Reading | 23. Judgement |
| 17. Writing | 24. Similarities |
| 18. Vocabulary | 25. Prefrontal Sign |
| 19. Gnosis | 26. Motor System |
| 20. Stereognosis | |

Scales in **Red** retained



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

10	X	People with mild or minimal dementia can score 10
9	XX	
8	XXX	
7	XXXX	
6	XXXXX	
5	XXXXXX	
4	XXXXXXX	
3	XXXXXXXX	
2	XXXXXXXXX	
1	XXXXXXXXXX	People with severe dementia can score 1



DEMENTIA
TRAINING
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

10	10
	9
8	8
	7
6	6
	5
4	4
	3
2	2
	1

Each of the functional hierarchies were constructed with 5 or 10 items

The maximum score for each hierarchy = 10

The maximum score for the scale (10 x 20) = 200



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

Reliability and Validity

- N= 50 consecutively admitted patients
 - (AD N=35; Multi infarct dementia (N=15)
 - Males =18; Females = 32; Age 65-97 years
- Each patient assessed independently by 2 trained raters on the HDS, Blessed Dementia scale and the Crichton Geriatric Behavioural Rating Scale
- 15 days following initial assessment each patient reassessed by same 2 raters
- Scores ranged from 11-191 with a mean of 113 and SD of 50



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

Table 2
Inter-Rater Reliability of Subscales

1. Orienting	.54
2. Prefrontal	.61
3. Ideomotor	.64
4. Looking	.73
5. Ideational	.87
6. Denomination	.65
7. Comprehension	.80
8. Registration	.78
9. Gnosis	.76
10. Reading	.72
11. Orientation	.63
12. Construction	.69
13. Concentration	.80
14. Calculation	.75
15. Drawing	.77
16. Motor	.59
17. Remote Memory	.65
18. Writing	.74
19. Similarities	.70
20. Recent Memory	.80



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

OTHER PSYCHOMETRIC PROPERTIES

- Age, Gender, Education/Social class and Total HDS score:
Démonet et al. (1990); Gold and Dastoor (1996)
- Used in different settings:
 - Acute Care Hospital: Cole and Dastoor (1983)
 - Long Term Care: Read (1993); Ronnberg and Ericsson (1994)
- Community Setting: Gold and Dastoor (1992), Bickel (1992), Cooper et al. (1992; 1996)
- Tool for Occupational Therapy Assessments: Zgola (1987); Bickel (1992)
- All levels of severity: Cooper et al (1992) ; Ronnberg and Ericsson (1994)



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

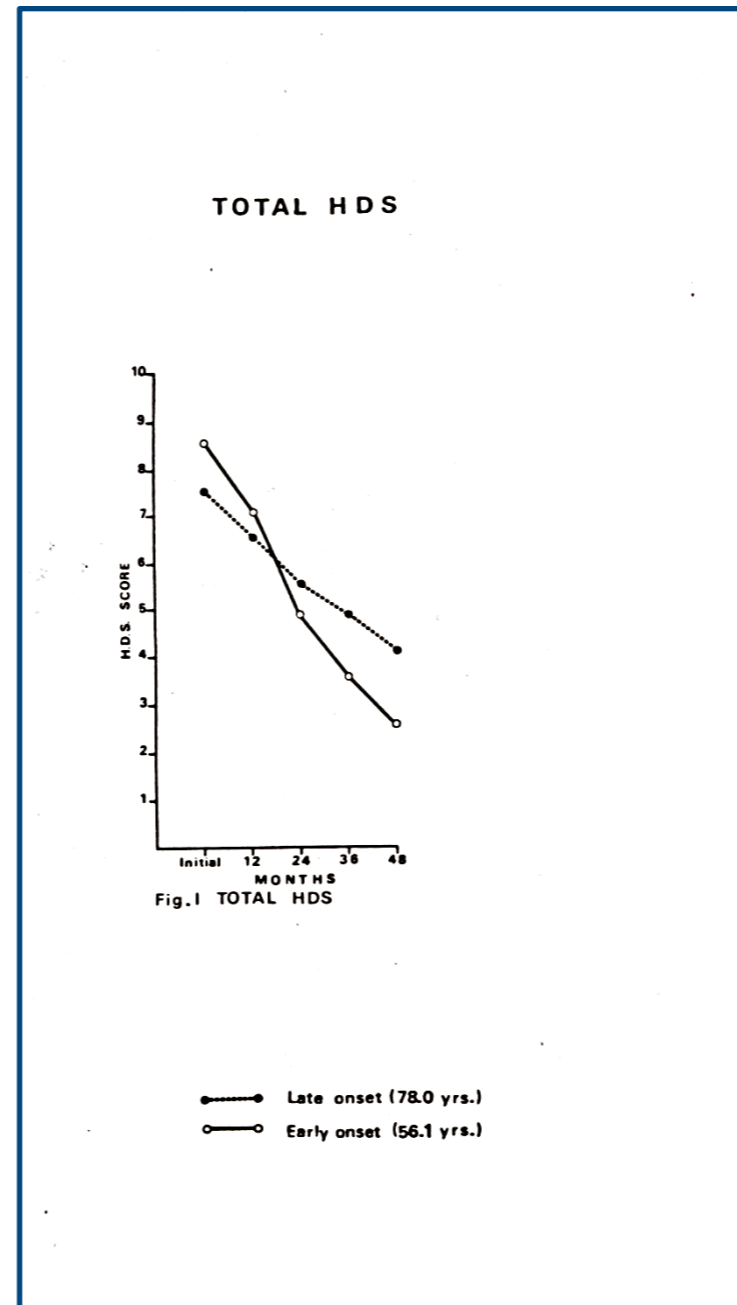
STUDIES REPORTING LONGITUDINAL FOLLOW-UP USING THE HDS

- Dastoor and Cole 1985
- Dastoor and Cole 1988 - Age related AD profiles (Am J of Alzheimer Care and Related Disorders, Nov/Dec 1988 29-35)
- Cooper and Brickel 1989 - Early detection of dementia in the community (Nervenarzt 60 (8) 472-82)
- Hamel, Gold, Andres et al 1990- Predictive studies on aggression in the elderly (Gerontologist 30 (2) , 206-211)
- Gauthier et al 1990-Clinical drug trials for intermediate stage AD (New England Journal of Medicine, 322, 1272-1276)
- Gold and Dastoor 1992
- Brickel 1996 The Hierarchic Dementia Scale: Usage (Int. Psychoger 8, 213-224)
- Schaufele et al 2002 What factors influence cognitive decline in older adults suffering from dementing disorders , Int J Ger Psychiatry 17, 1055-1063
- Boller F et al 2002 Clinical features and assessment of severe dementia: a review. Eur J. Neurol 9, 125-13



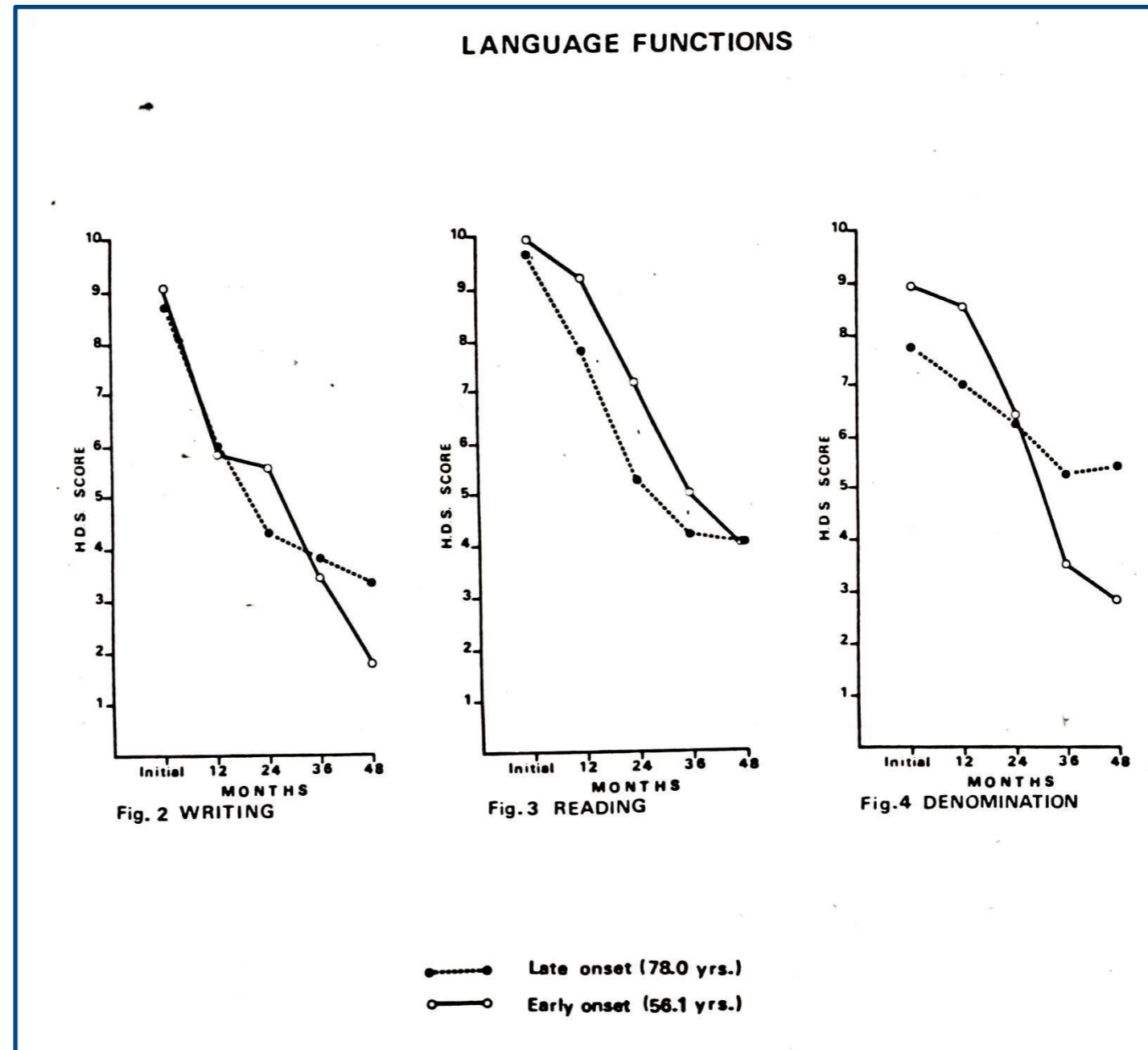
**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale



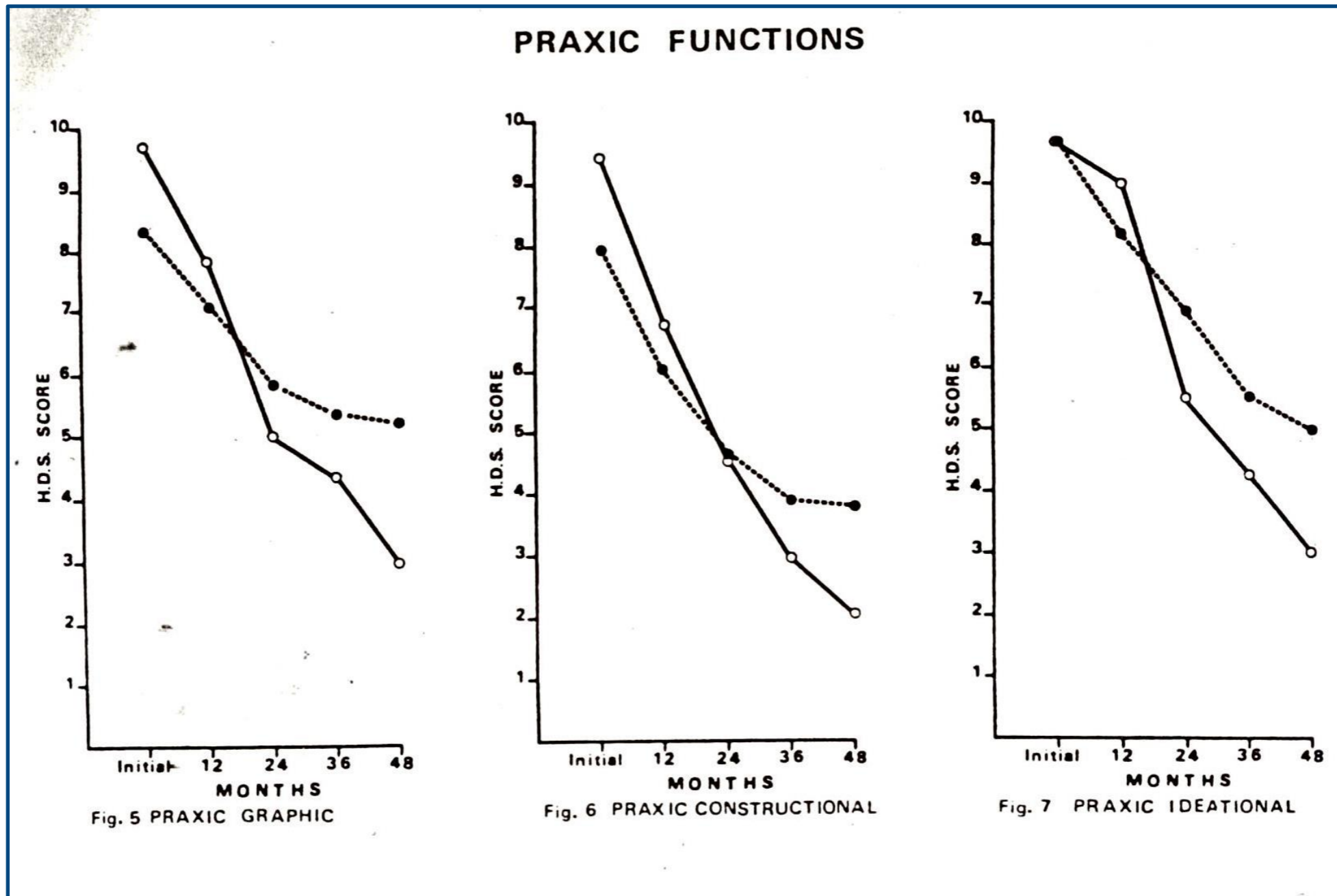


Hierarchic Dementia Scale



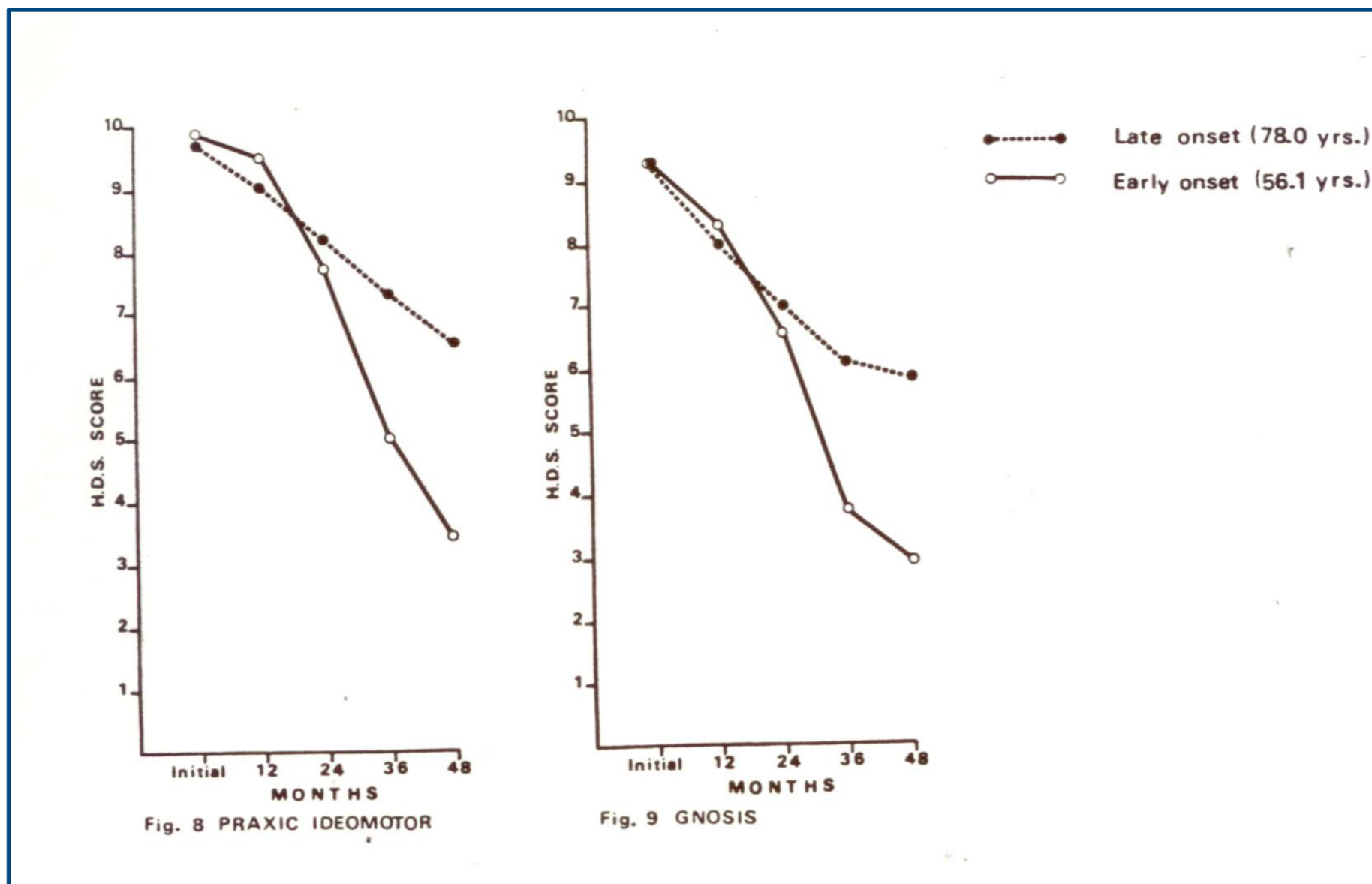


Hierarchic Dementia Scale



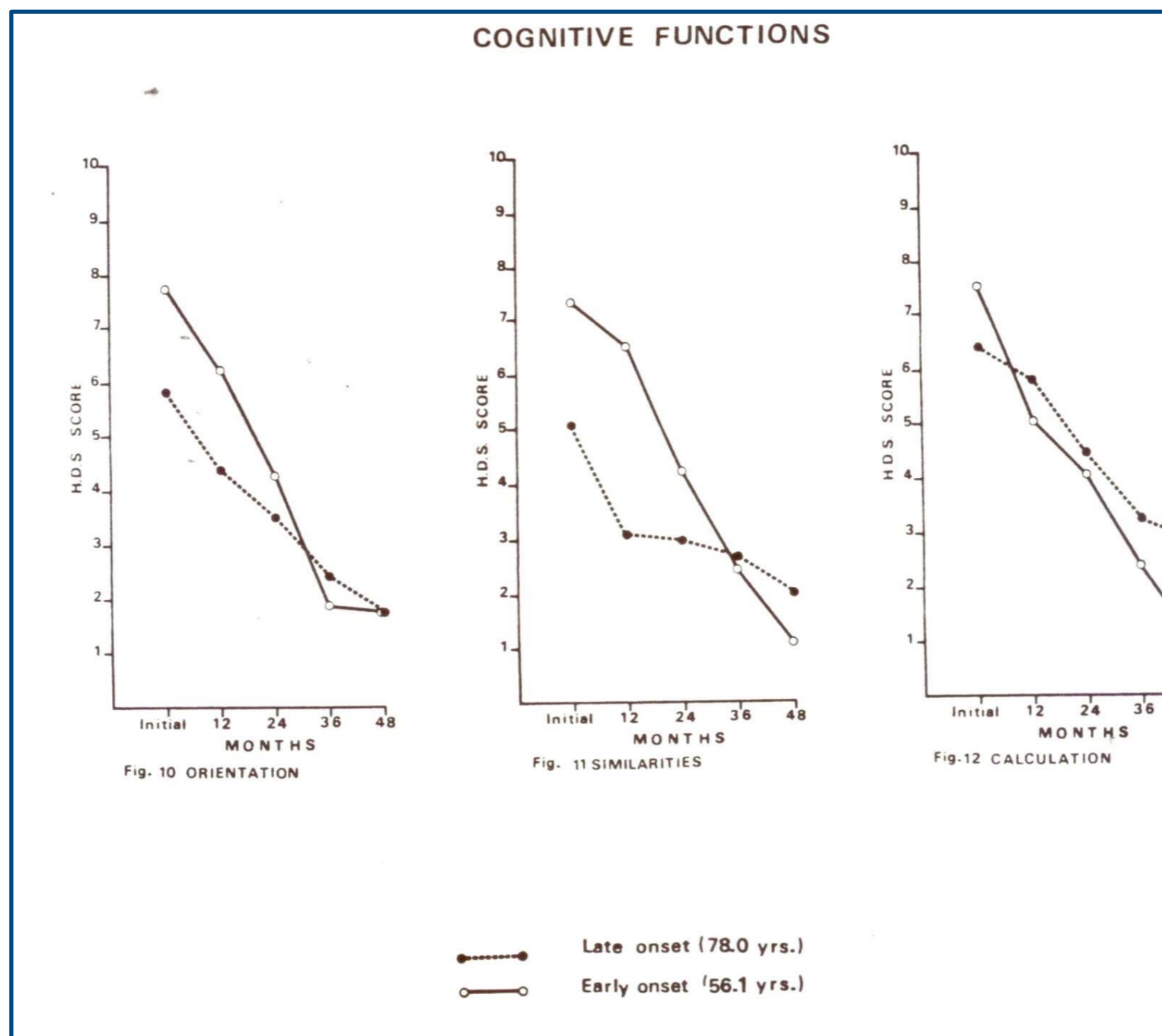


Hierarchic Dementia Scale



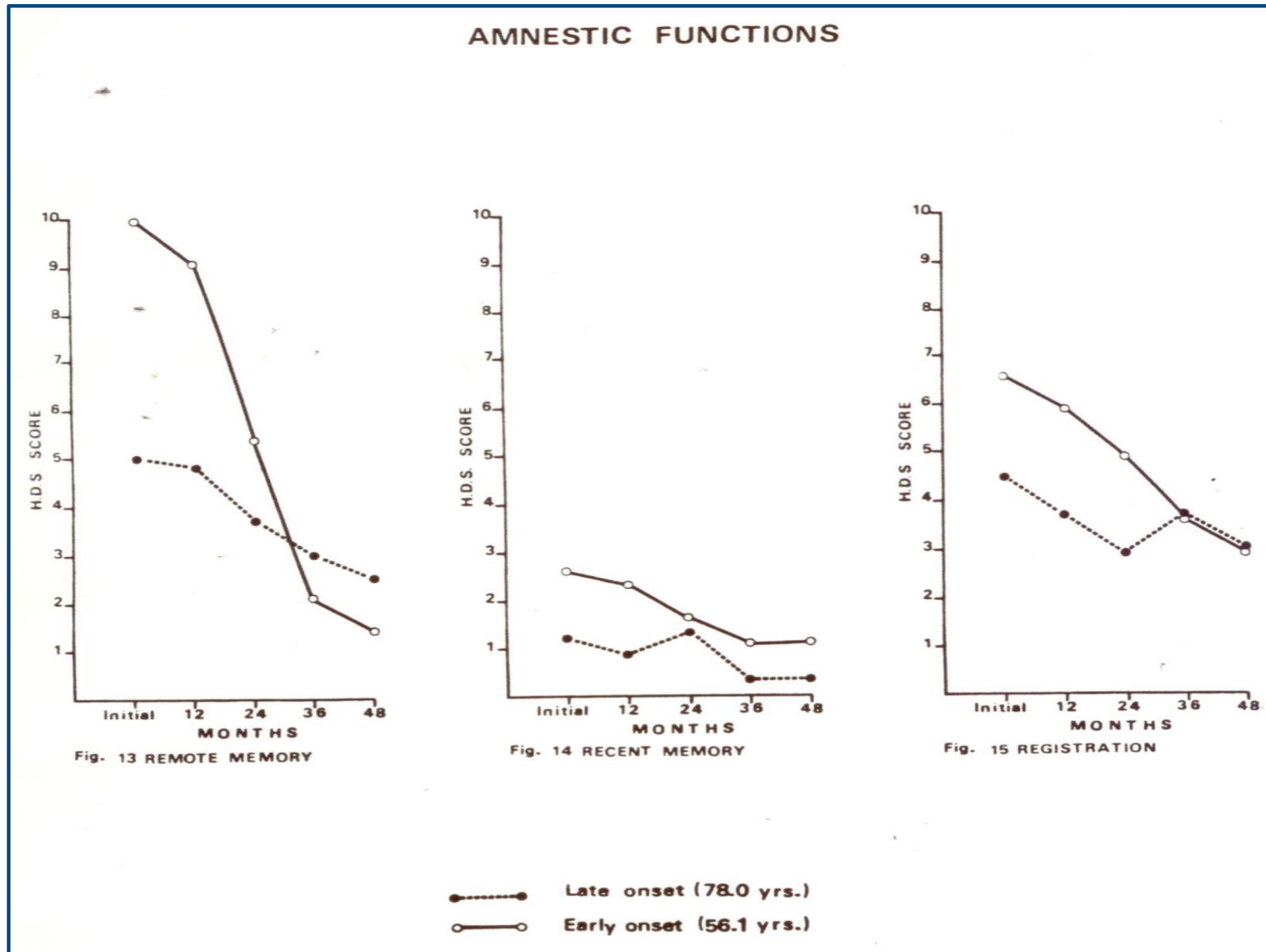


Hierarchic Dementia Scale





Hierarchic Dementia Scale





**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

SALIENT FEATURES OF THE SCALE

- EASY TO USE
- PERFORMANCE IS MAXIMIZED
- HIGH INTER-RATER AND TEST-RETEST RELIABILITY
- GOOD CONCURRENT AND PREDICTIVE VALIDITY
- SENSITIVE TO CHANGE OVER TIME
- ELIMINATE FLOOR AND CEILING EFFECT
- CAN MONITOR PROGRESSION OF THE DISEASE
- ALLOWS THERAPIST TO TAILOR ACTIVITIES DEPENDING ON THE PROFILE



DEMENTIA
TRAINING
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

SUMMARY

- The **HDS** is an instrument for measuring the **severity of mental impairment** based on Piagetian concepts, **neuropsychological findings** and **hierarchic nature** of decline in mental functions
- **Performance of 20 specific functions** can be rapidly pinpointed over a wide range of impairment
- **The scale** is reliable, valid, responsive, safe, inexpensive and easy to use
- HDS may be used to study **treatment efficacy or disability and service requirements** in relation to the severity of dementia



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Hierarchic Dementia Scale

THANK YOU



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Revision of the HDS

Terrie Simpson



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Background

 Used many assessments in the UK

 MMSE, MEAMS, CAMCOG, MoCA, RBMT

 Migrated to Australia 2007

 Introduced to HDS by Jenny Perkins



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Initial Impressions

 Non-confrontational

 Flexible

 Comprehensive

 Logical

 Useful results



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Ongoing Experience

- HDS kit in every OT cupboard

- Rarely used in hospital settings

- Barriers:

 - Time

 - Training

 - Understanding

 - Outdated appearance



DEMENTIA
TRAINING
STUDY CENTRES
www.dtsc.com.au

DTSC Leadership Program

 Brisbane, February 2013

 Multiple professions

 Introduction to HDS and Possibility
Oriented Approach

 Networking



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

DTSC Fellowship

 April 2014

 Develop and evaluate workshops for HDS

 Create training resources



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Revision of HDS

- Retain integrity and validity of HDS
- Update assessment materials
- Update manual and scoresheet
- Affordable
- Create new training DVD
- Create computer app



Items to replace



Francois, the little farmer,
gets up early in the morning.
He quickly heats his porridge
and milk. "Hurry up, says his
mother "The animals are also
hungry!"

UNPRONOUNCEABLE



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Expert Users

- Small group of Occupational Therapists
- Experience in using HDS
- Willing to give time and expertise
- Weekly emails
- Evaluated possibilities
- Made suggestions
- Gave encouragement



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

New look

 Colour scheme

 Graphic design student






 Icons and logo





**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Manual

-  Updated language
-  Updated terminology
-  Clean, modern look
-  Colour-coded pages
-  Easy to use



**Hierarchic
Dementia Scale -
Revised**
2015
Instruction Manual

This revised version has been approved by Dr Martin Cole and Dr Dolly Dastoor, McGill University, Montreal, Quebec, Canada

Edited by: Terrie Simpson, Occupational Therapist
Western Australia Dementia Training Study Centre

Funded by the Australian Government Department of Social Services. Visit www.dss.gov.au for more information.



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Scoresheet

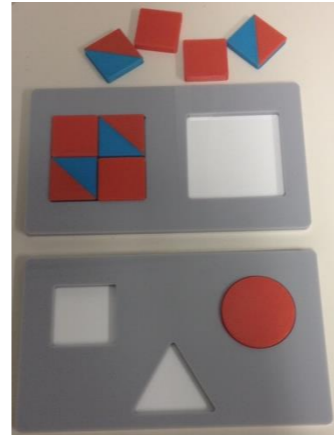
- User prompts (photos, diagrams, answers)
- Maintains colour scheme
- Includes graph, bar chart and table of scores



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

New items

 Puzzle boards



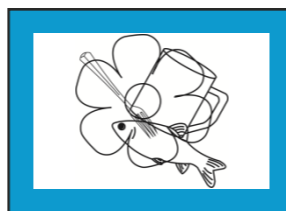
 Toothbrush and toothpaste

 Jam jar

 Picture



 Flashcards



 Spectacles



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Contributors



3D Printing
STUDIOS

WA Shoe Care Products

Heather Freegard: inspiration

Claire Jay: student in graphic design and creative advertising at Curtin University

Luke de Vries: photographer
lukedevriesphoto@gmail.com

Expert Users:

Elizabeth Oliver
Jenny Fowler
Faye Donnan
Alison Rolfe
Francis Anthony
Katie Cherry
Jennifer Edgecombe



Curtin University



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Final Kit

 Supplier

 Cost

 How to order



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Further work

 Computer app under development

 Training DVD

 Training workshops

 Publicity



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Questions?



**DEMENTIA
TRAINING**
STUDY CENTRES
www.dtsc.com.au

Thank you