

Executive function in self-neglecting *adult protective services (APS)* referrals compared with elder psychiatric outpatients.

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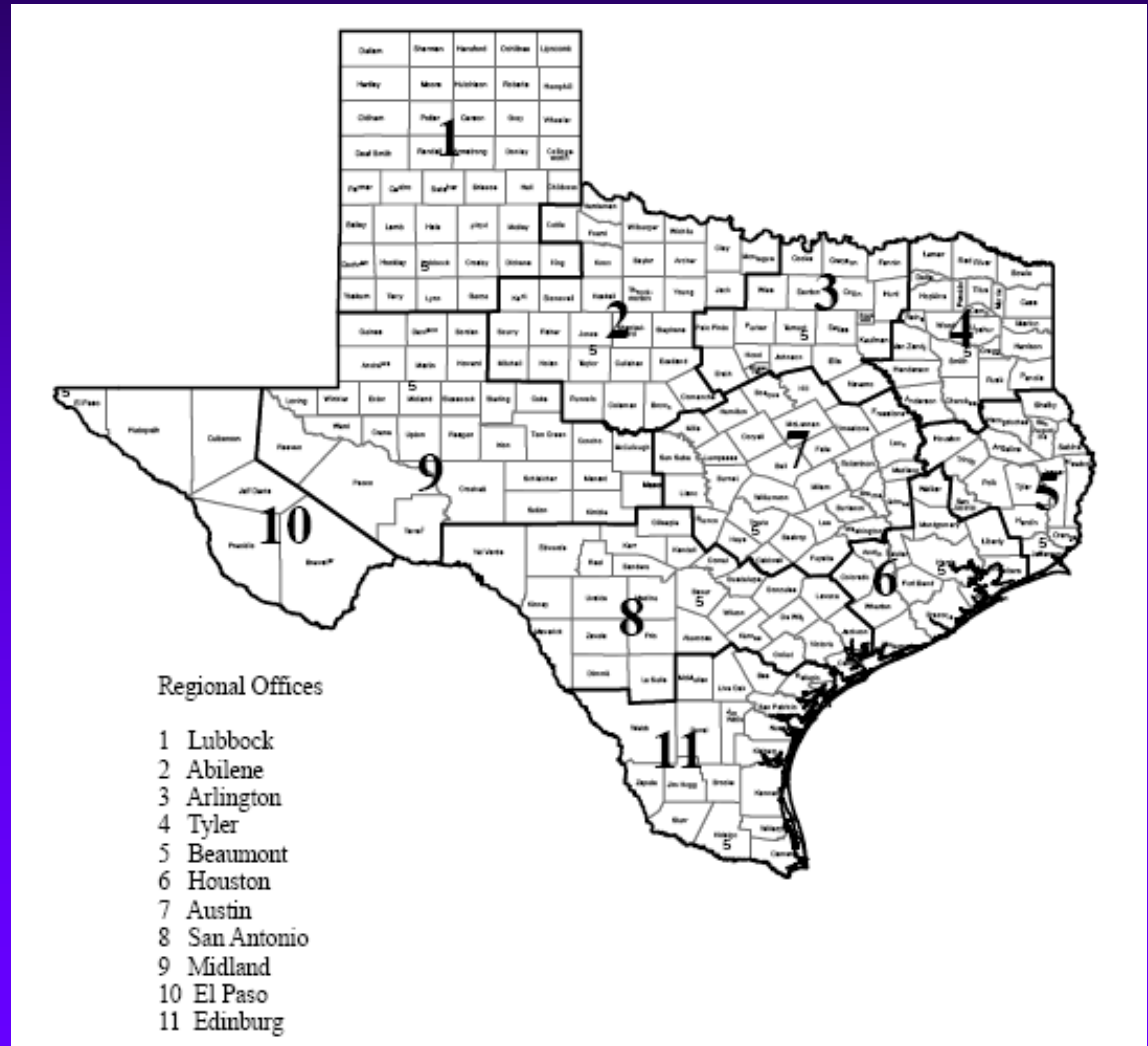
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Disclosure

- UTHSCSA has a financial contract with Texas APS Region 8 to provide decisional capacity evaluations.
- Dr. Donald Royall holds the copyright to the EXIT25 and CLOX and is the presenter's immediate supervisor, mentor, and life long friend.

UTHSCSA Capacity Assessments

Region 8 Leadership:
Jo Ann Tobias-Molina
Sonia Samples
Lisa Loya
Colleen Phillips



UTHSCSA Capacity Assessments

- Clinical Interview
- Neuropsychological Screening
- Performance Based Functional Status Assessment
- Observation of Living Space
- Risk Assessment

Which Cognitive Functions are most Essential to Decisional Capacity?

- Memory
- Orientation
- Language
- Math
- Visuospatial
- Executive Function

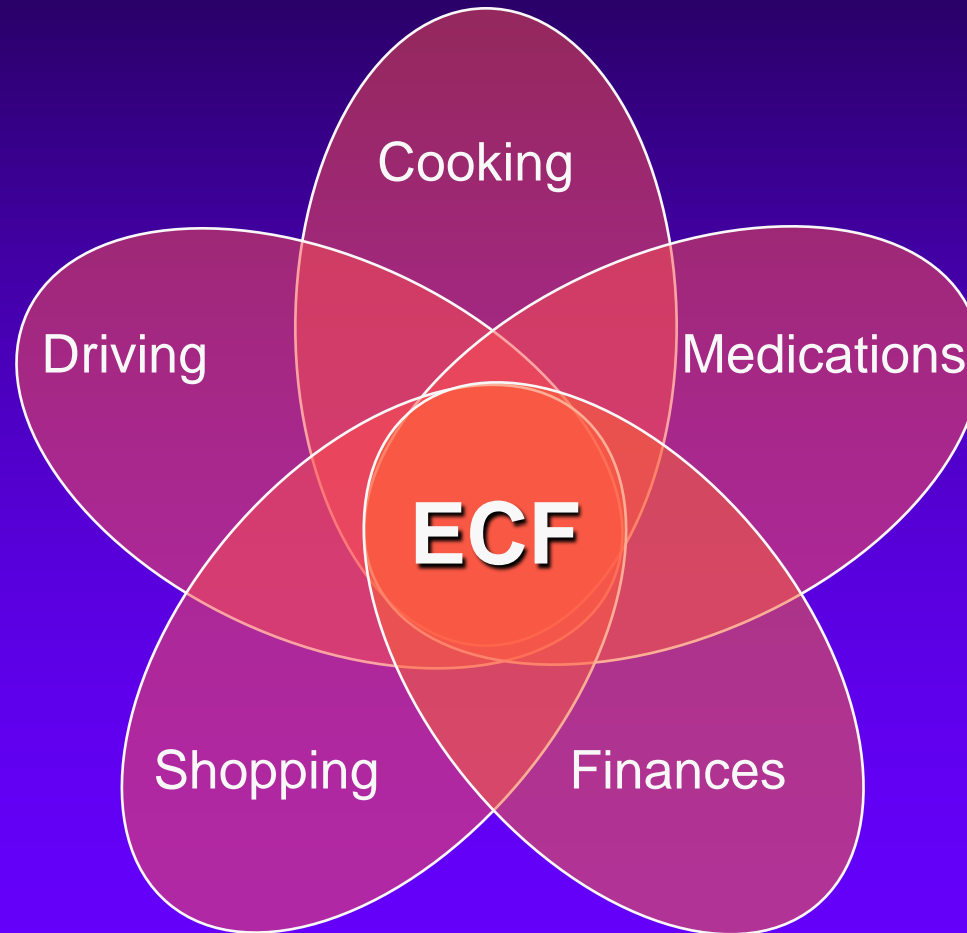
Executive Function

- DSM IV Definition: the ability to think abstractly and to plan, initiate, sequence, monitor and stop complex behavior
- That set of cognitive processes that allow one to act independent of the environment instead of displaying behaviors mediated by the environment

Executive Function is Relevant to Decision Making Capacity

- Executive function is associated with frontal systems.
- Frontal lesions affect planning, hypothesis testing, judgment and insight.
- Frontal impairment can be demonstrated in many medical /psychiatric disorders.

Loss of Executive Control Affects Many Functional Domains



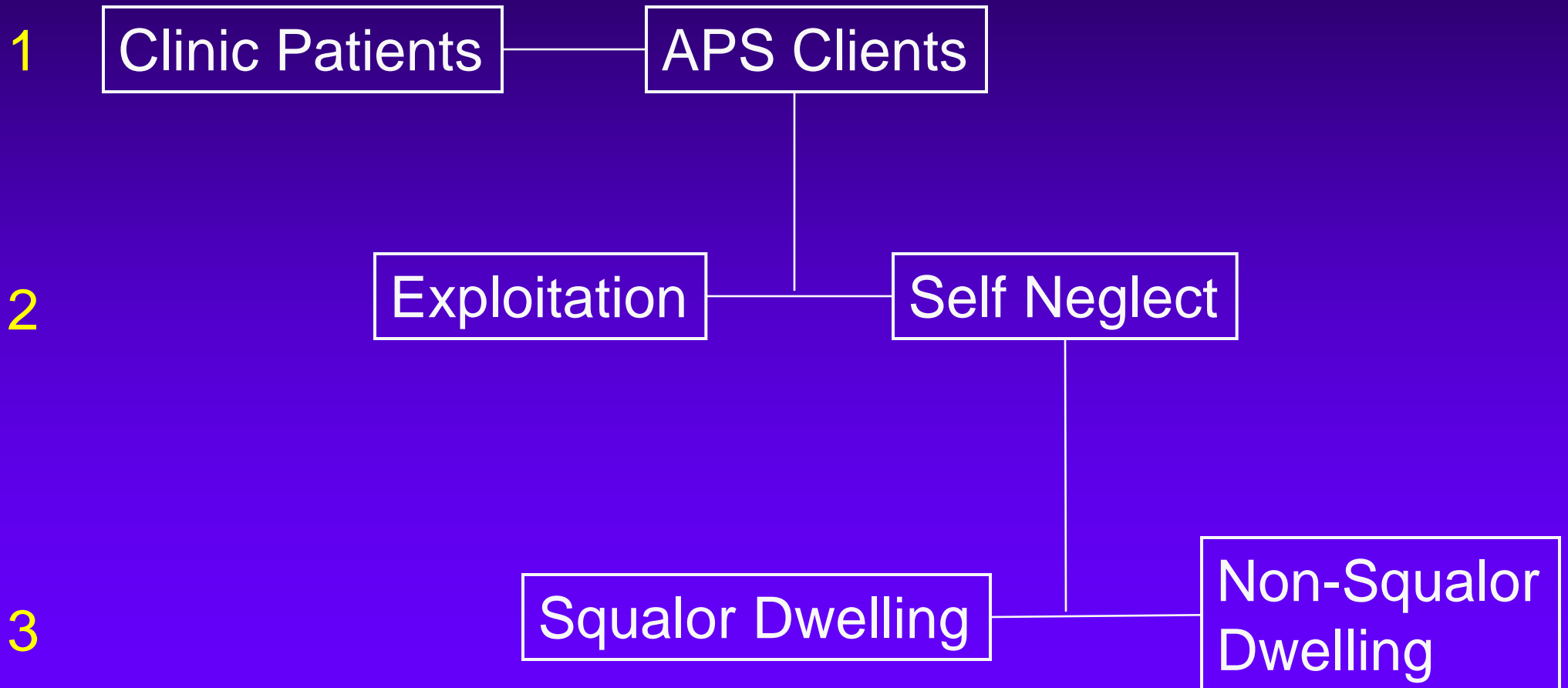
Study Objectives

- The objectives of this study were:
 - to determine the prevalence of cognitive impairments in APS referrals to UTHSCSA for decision making capacity consultations.
 - to compare cognitive performance between APS referrals and patients seen in UTHSCSA geriatric psychiatry outpatient clinics.

Study Hypotheses

- We hypothesized:
 - The prevalence of executive function impairment would be greater than that observed for other cognitive domains.
 - APS clients would have worse executive function impairment than geri-psych outpatients.
 - Self-neglectors would have worse impairment than those referred for other reasons.
 - Squalor dwellers would have the worst impairment.

Comparison Groups



Methods

- Retrospective medical record review
- Demographic data
- Neuropsychological Test Scores

Methods

Test	Cognitive Domain	Range	Cut-point
MMSE	General cognition	0-30	≤ 24
EXIT25	Executive function	0-50	≥ 15
CLOX1	Executive function	0-15	≤ 10
CLOX2	Visuospatial function	0-15	≤ 12
GDS	Depression	0-15	≥ 5

Results

	APS Clients (n=76)	Geriatric Psychiatry Outpatients (n=61)	F/ χ^2 (df)	p
Age	77.0 (10.3)	73.2 (7.3)	5.67 (1,135)	0.02
Ethnicity				
Black	4%	5%		
Hispanic	24%	23%		
White	72%	70%		
Asian	0	2%		
Education				
0-8th grade	26%	2%	12.5 (2)	0.002
9-12th grade	33%	35%		
>12th grade	41%	63%		

Results

Psychometric performance of APS clients vs. geriatric psychiatry outpatients				
	APS Clients (n=76)	Geropsych Clinic (N=61)	F/ χ^2	<i>p</i>
MMSE				
mean	22.1 (6.5)	23.3 (6.4)	0 (1,92)	ns
% fail	51%	52%	0.01	ns
CLOX1				
mean	7.4 (4.0)	9.3 (4.2)	4.79 (1,92)	0.03
% fail	75%	47%	9.34	0.002
CLOX2				
mean	10.6 (3.2)	11.6 (3.8)	3.17 (1,91)	ns
% fail	64%	43%	4.64	0.03
EXIT25				
mean	24.3 (6.4)	17.3 (7.6)	15.7 (1,87)	<0.001
% fail	89%	63%	10.11	0.001
GDS				
mean	3.6 (3.2)	5.2 (3.9)	6.07 (1,112)	0.02
% fail	29%	51%	5.8	0.02

Results

- 49% of APS subjects **passed** the MMSE of which:
 - 55% failed CLOX1
 - 83% failed EXIT25
- No client who passed CLOX1 or the EXIT25 failed the MMSE.
- Mean depression score was relatively low.

Results

- Subjects referred for self-neglect performed worse on every cognitive measure than those referred for other reasons:



Results

- There were no differences in cognitive performance between squalor dwelling (n=27) and non-squalor dwelling (n=28) self-neglectors.

Limitations

- Our APS sample does not represent all APS clients.
- Our neuropsychological battery consists only of screening instruments.
- The completion of neuropsychological testing ranged from 82% for the GDS to 65% for the EXIT25.

Conclusions

- Cognitive screens sensitive to executive function evidence more impairment than screens sensitive to other cognitive domains.
- Elders suffering self-neglect have worse cognitive performance than victims of exploitation.
- Squalor dwelling status is mediated by more than cognition.

Neuropsychological References

- Royall DR, Mahurin RK, Gray KF: Bedside assessment of executive cognitive impairment: the executive interview. *J Am Geriatr Soc* 1992; 40:1221–1226.
- Royall DR, Cordes JA, Polk M: CLOX: an executive clock drawing task. *J Neurol Neurosurg Psychiatry* 1998; 64:588–594.
- Folstein M, Folstein S, McHugh PR: ‘Mini Mental State’: a practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975; 12:189–198
- Lyness JM, Noel TK, Cox C, et al: Screening for depression in elderly primary care patients. A comparison of the Center for Epidemiologic Studies-Depression Scale and the Geriatric Depression Scale. *Arch Intern Med* 1997; 157:449–454

CLOX: An Executive Clock Drawing Task

Royall DR, Cordes JA, Polk M: CLOX: an executive clock drawing task. J Neurol Neurosurg Psychiatry 1998; 64:588–594.

CLOX

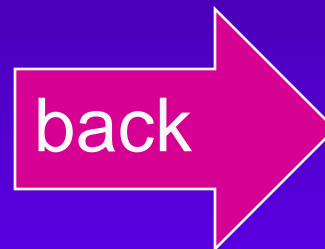
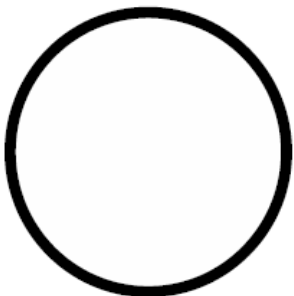
CLOX: An Executive Clock Drawing Task

Copyright Royal, 1995

STEP 1: Turn this form over on a light colored surface so that the circle below is visible. Have the subject draw a clock on the back. Instruct him or her to "Draw me a clock that says 1:45. Set the hands and numbers on the face so that a child could read them." Repeat the instructions until they are clearly understood. Once the subject begins to draw, no further assistance is allowed. Rate this clock in the CLOX 1 column.

STEP 2: Return to this side and let the subject observe you draw a clock in the circle below. Place 12, 6, 3, and 9 first, then fill in the rest of the numbers. Set the hands again to "1:45". Make the hands into arrows. Make the hour hand shortest. Invite the subject to copy your clock in the lower right corner. Rate this clock in the CLOX 2 column.

ORGANIZATIONAL ELEMENTS	Point Value	CLOX 1	CLOX 2
Does the figure resemble a clock?	1		
Circular face present?	1		
Dimensions > 1 inch?	1		
All numbers inside the perimeter?	1		
No sectoring or tic marks?	1		
12, 6, 3, & 9 placed first?	1		
Spacing intact? (Symmetry on either side of 12 and 6 o'clock?)	1		
Only Arabic numerals?	1		
Only numbers 1 — 12 among the numerals present?	1		
Sequence 1 — 12 intact? (No omissions or intrusions)	1		
Only two hands present? (Ignore sectoring/tic marks)	1		
All hands represented as arrows?	1		
Hour hand between 1 and 2 o'clock?	1		
Minute hand obviously longer than the hour hand?	1		
None of the Following	1		
1) hand point to 4 or 6 o'clock			
2) "1:45" present?			
3) Any other notations (e.g. "9:00")?			
4) Any arrows point inward?			
5) Intrusions from "hand" or "face" present?			
6) Any letters, words, or pictures?			
7) Any intrusions from circles below?			
TOTAL:			



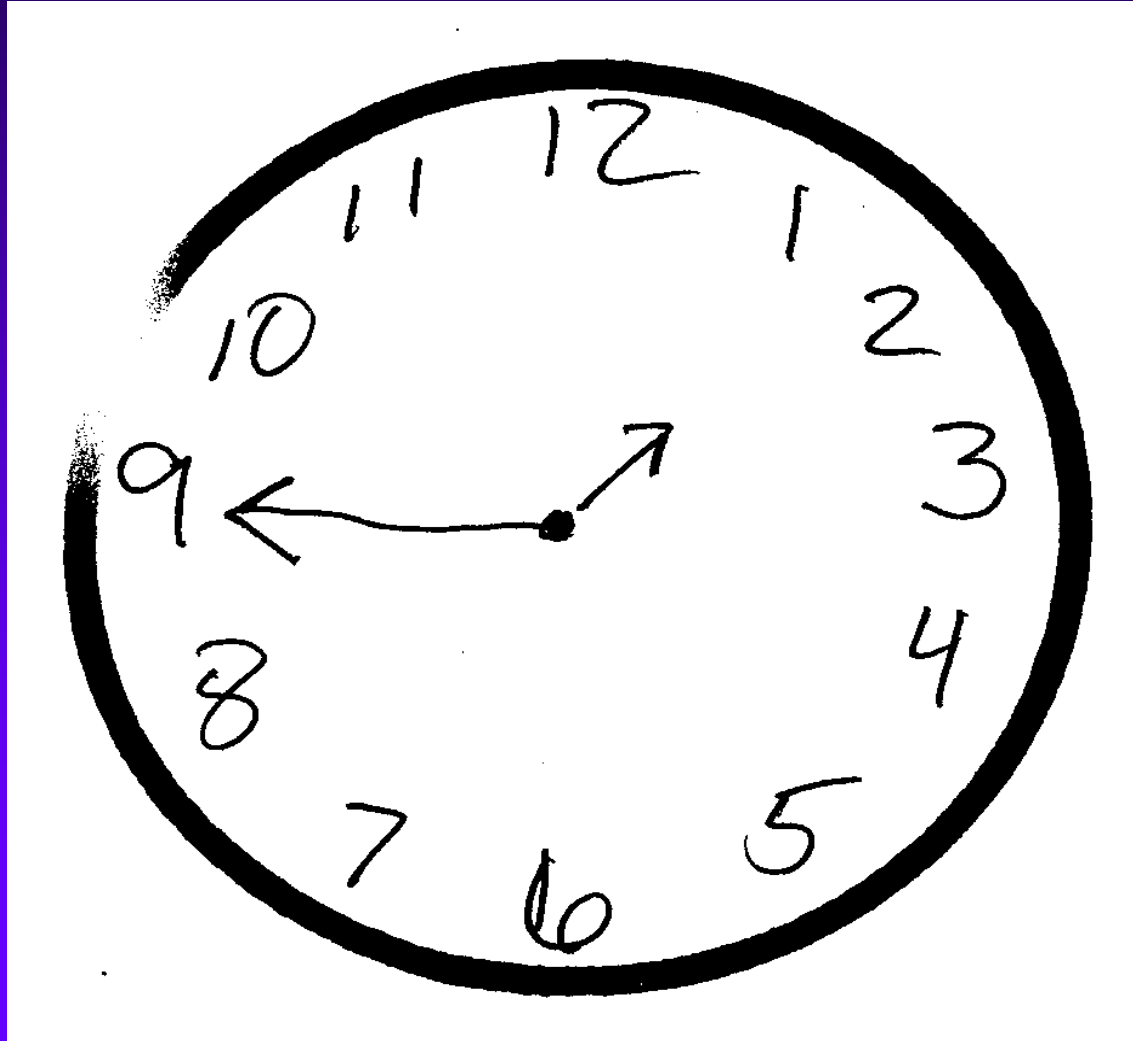
Instructions: CLOX1

- 1) Place the blank (back) side of the CLOX form in front of the subject.
- 2) State “Draw me a clock that says 1:45. Set the hands and numbers on the face so that a child could read them.”
- 3) Once the subject begins the task, no further assistance is allowed (i.e. no prompting or repeat instructions). State “**Sir/Ma’am, it’s up to you**” for each question.

Instructions: CLOX2

- 1) After the subject completes CLOX1, turn the CLOX form over to the page with writing (front side) and let the subject observe you draw a clock in the printed circle.
- 2) Place 12, 6, 3, and 9 first and fill in the rest of the numbers.
- 3) Set the hands to “1:45”.
- 4) Make the hands into arrows.
- 5) Make the hour hand shorter.
- 6) Invite the subject to copy the clock in the lower right corner.

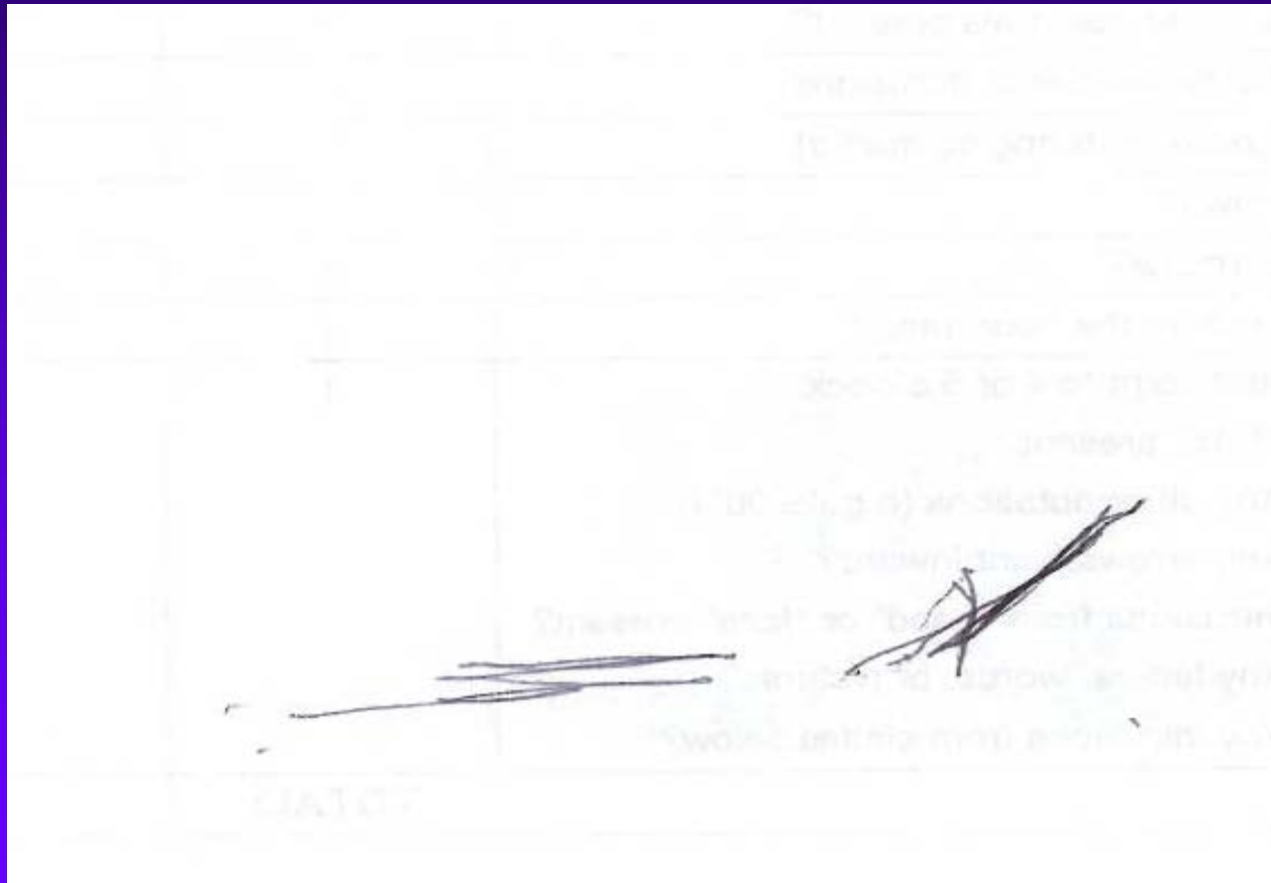
CLOX2 Example



CLOX Instructions Pearls

- You must use the form for it to be interpretable.
- You must say the instructions exactly like they are meant to be said.
- Once the client starts drawing, your only response to questions asked is “It’s up to you”.
- Cognitive screening tasks inform decision making capacity evaluations. **THEY DO NOT REPLACE THEM!!!**

Does the figure resemble a clock?



Age: 81 years

GDS: 1/15

MIS: 7

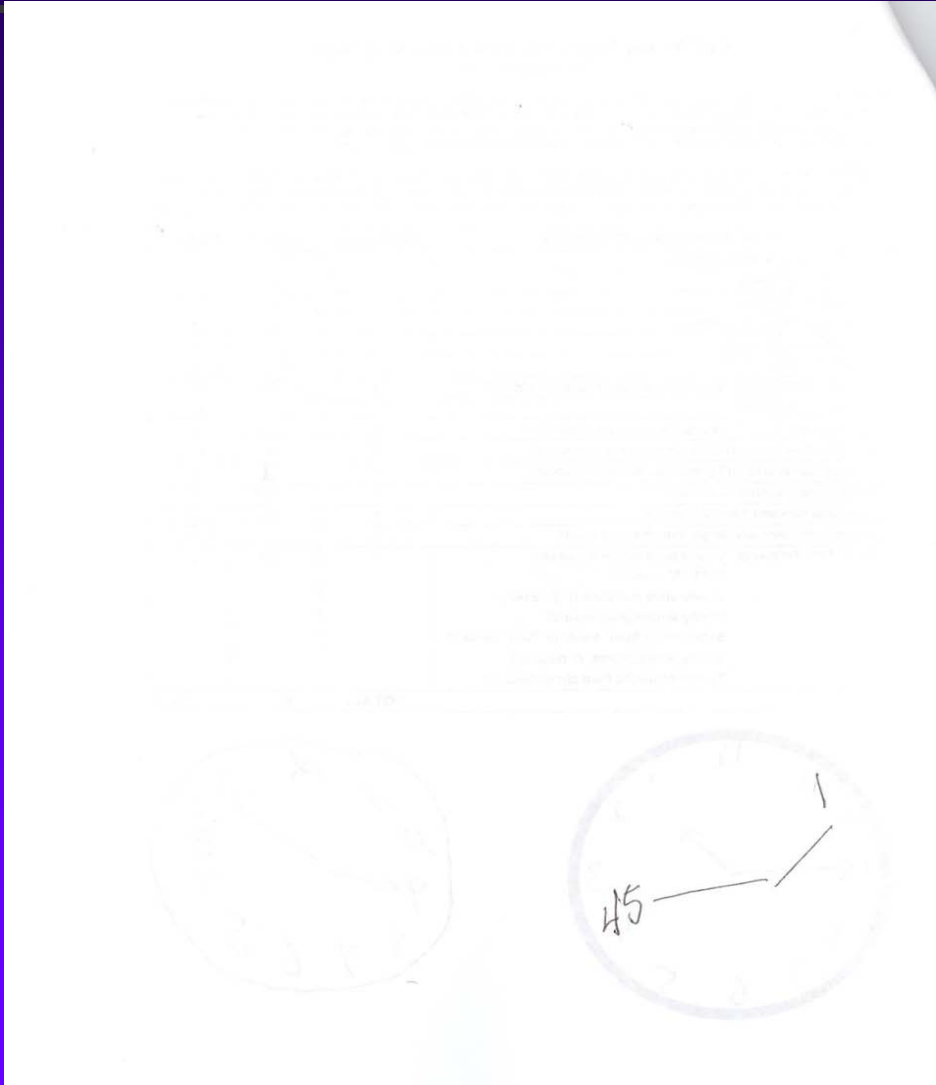
MMSE: 25

CLOX1: 5

CLOX2: 5

EXIT25: 29

Circular face present?



Age: 64 years

GDS: 5/15

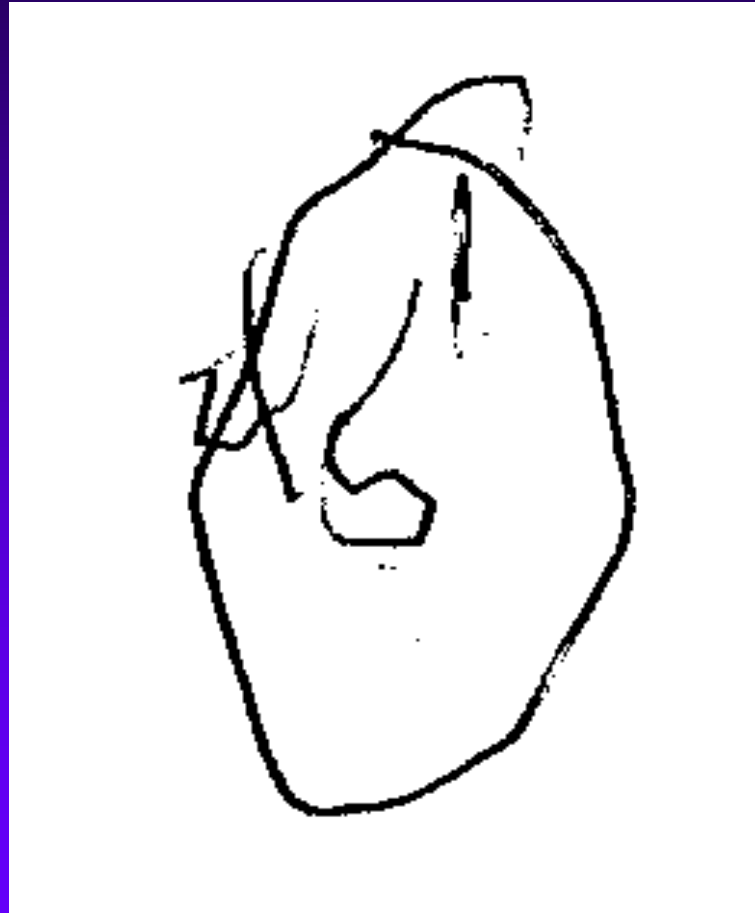
MIS: 8

MMSE: 28

CLOX1: 5

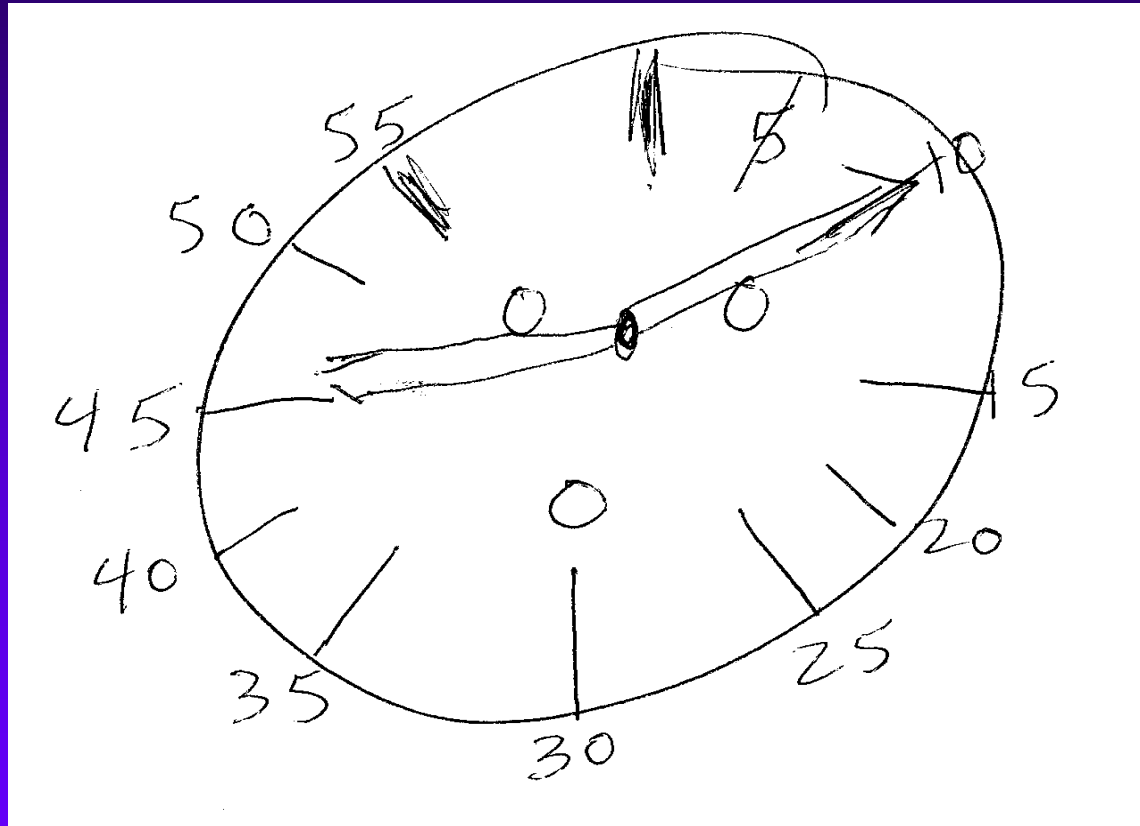
CLOX2: 11

Diameter greater than one inch?



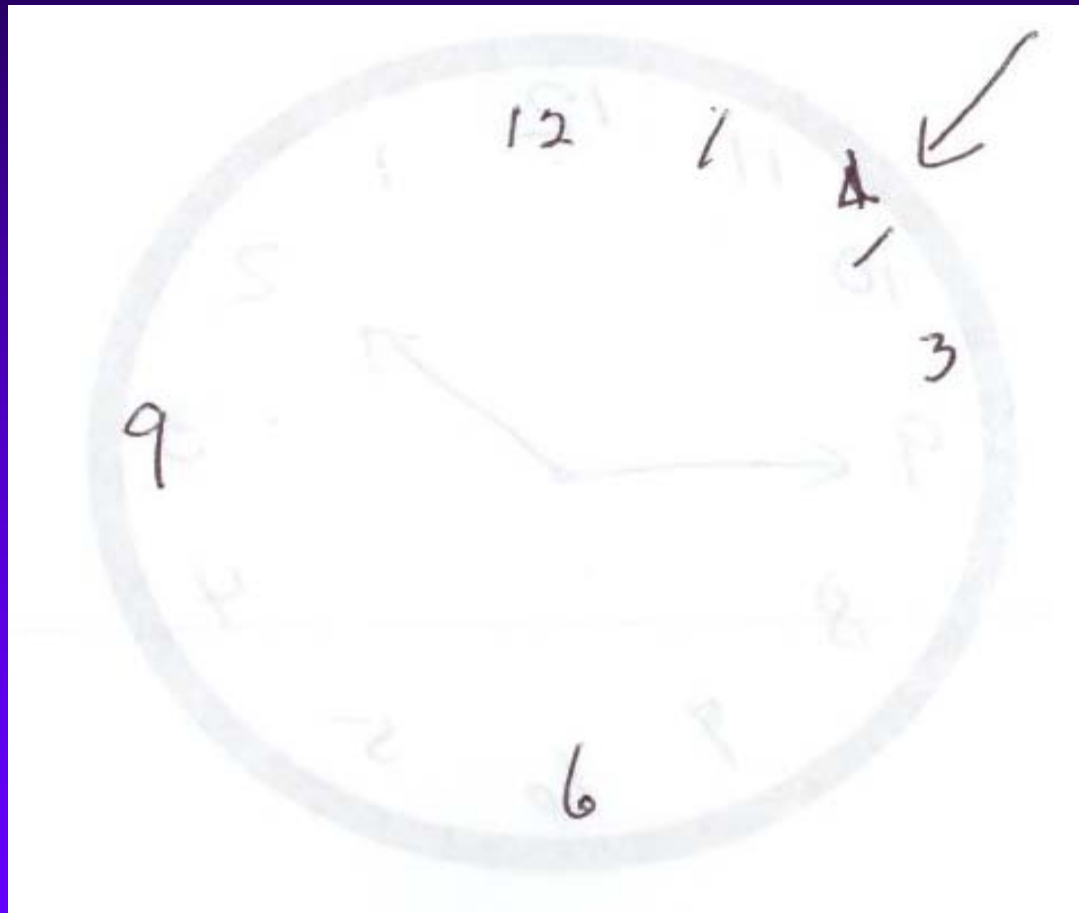
- 75yr with Vascular Dementia

All numbers in the circle?

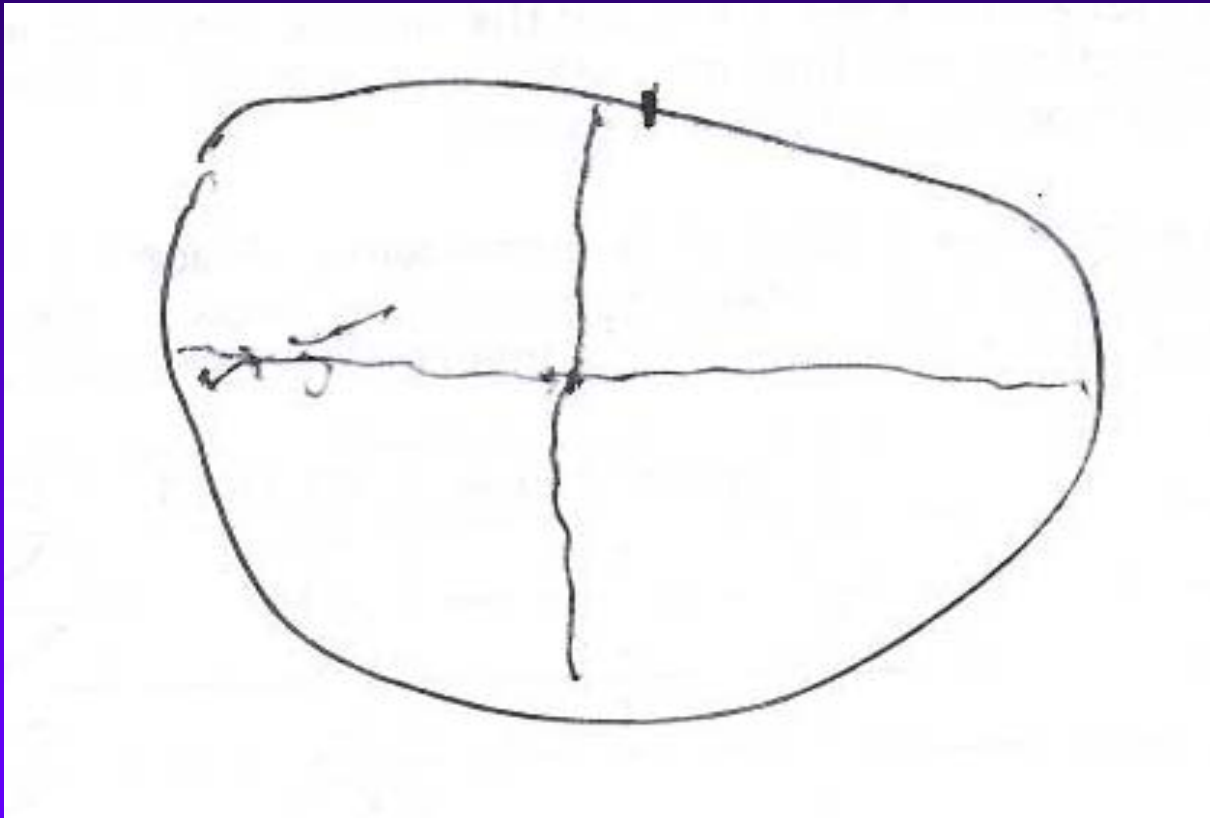


- 37yr with Mood d/o secondary to HIV

No sectoring or tic marks?



No sectoring or tic marks?



Age: 73 years

GDS: 2/15

MIS: 8

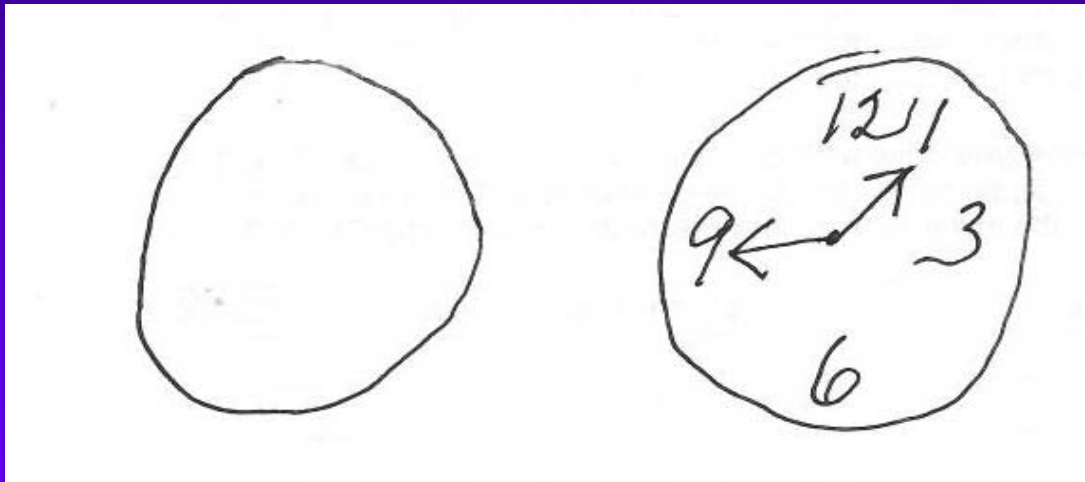
MMSE: 26

CLOX1: 4

CLOX2: 9

EXIT25: 30

12, 6, 3, & 9 placed first?



GDS: 4/15

MIS: 7

MMSE: 27

CLOX1: 11

CLOX2: 13

EXIT25: 27

Spacing intact?



Age: 88 years

CLOX1: 5

CLOX2: 8

Spacing intact?



Age: 84 years

GDS: 2/15

MIS: 4

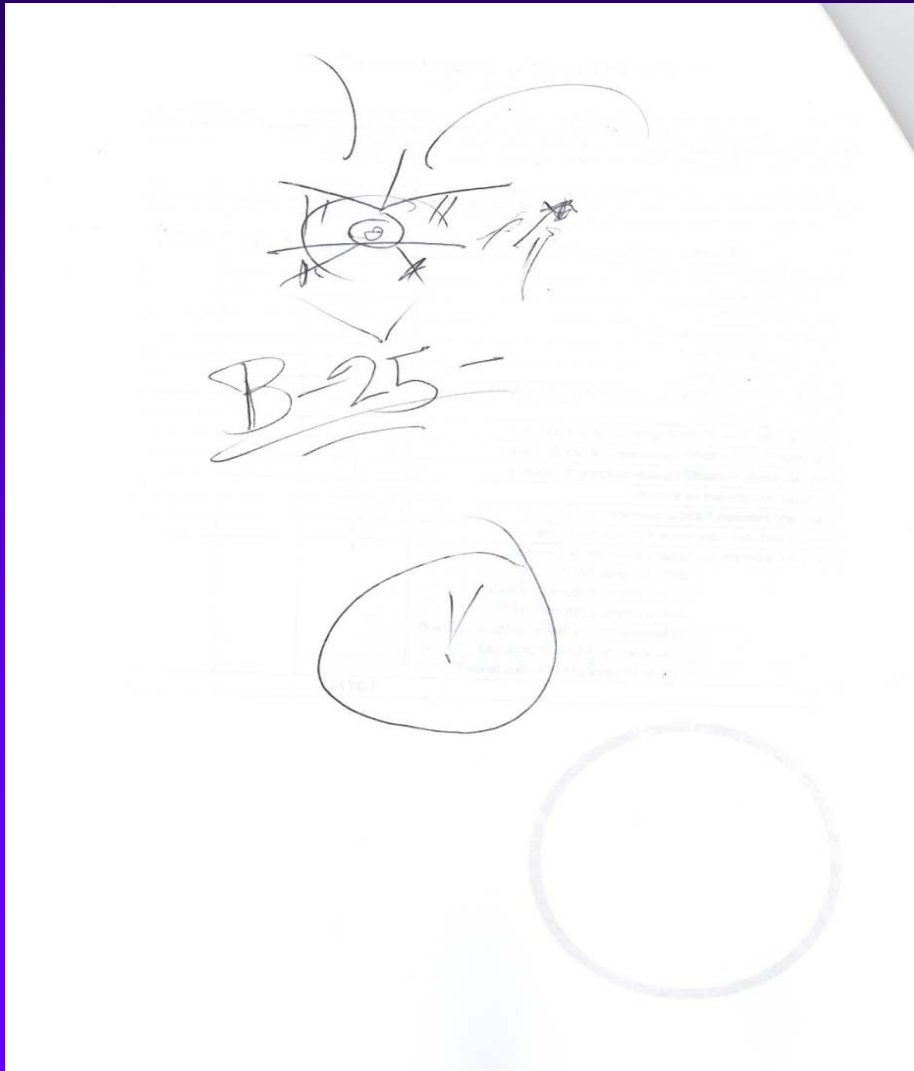
MMSE: 25

CLOX1: 7

CLOX2: 9

EXIT25: 28

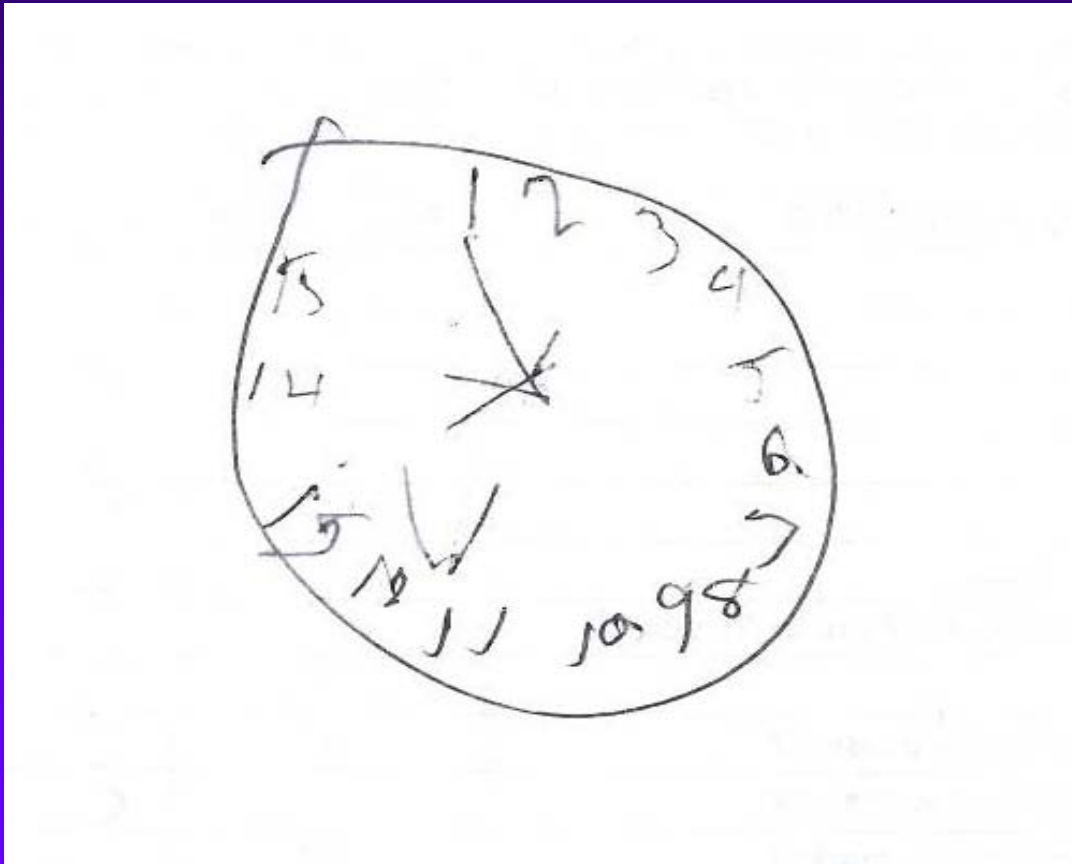
Only Arabic numerals?



Age: 86 years

CLOX1: 5

Only numerals 1-12 among the numerals present?



Age: 83 years

GDS: 2/15

MIS: 6

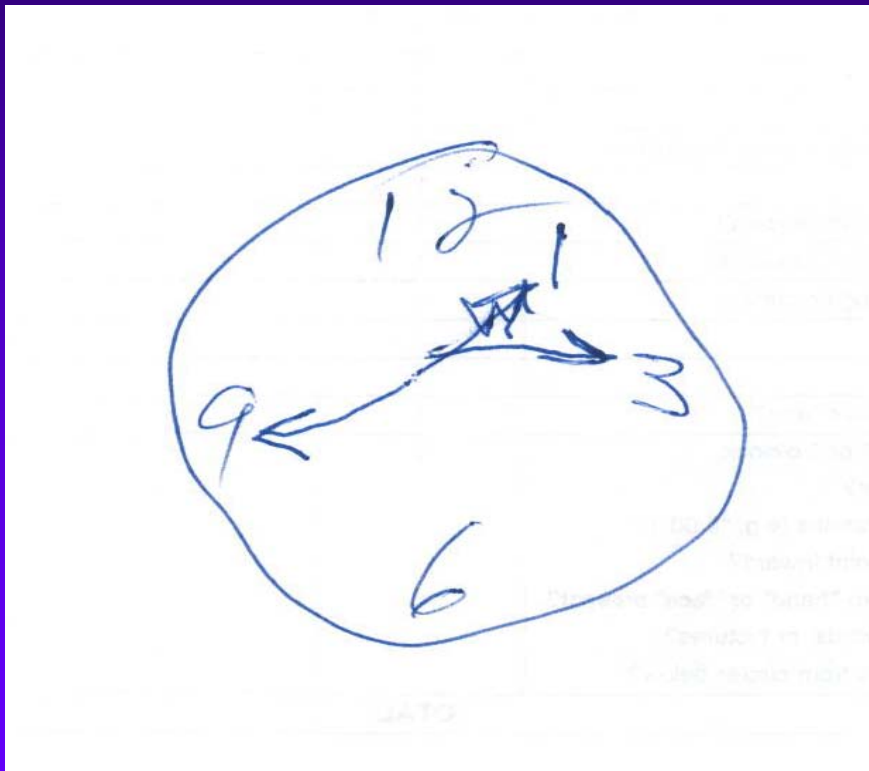
MMSE: 18

CLOX1: 7

CLOX2: 7

EXIT25: 36

Sequence 1-12 intact?



Age: 89 years

GDS: 3/15

MIS: 4

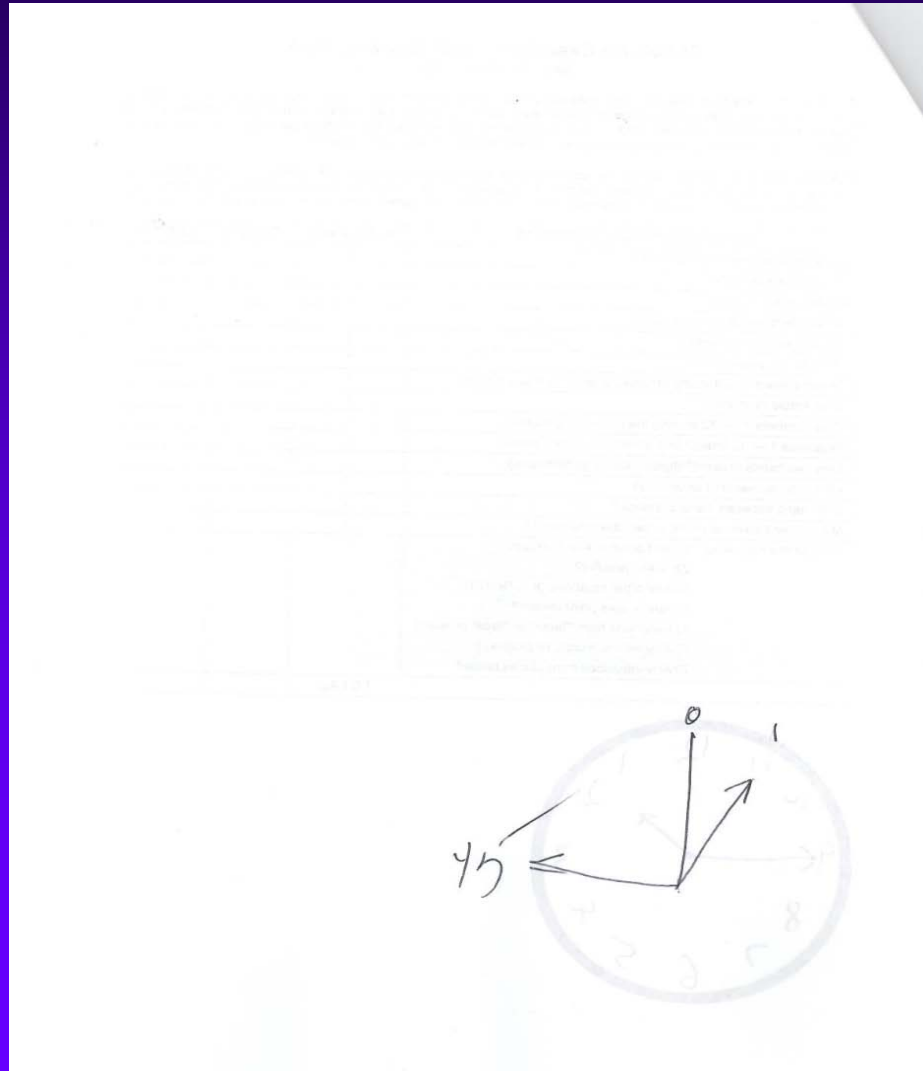
MMSE: 27

CLOX1: 12

CLOX2: 14

EXIT25: 20

Only two hands present?



Age: 65years

MIS: 5

CLOX1: 4

All hands represented as arrows?



Age: 84 years

GDS: 1/15

MIS: 8

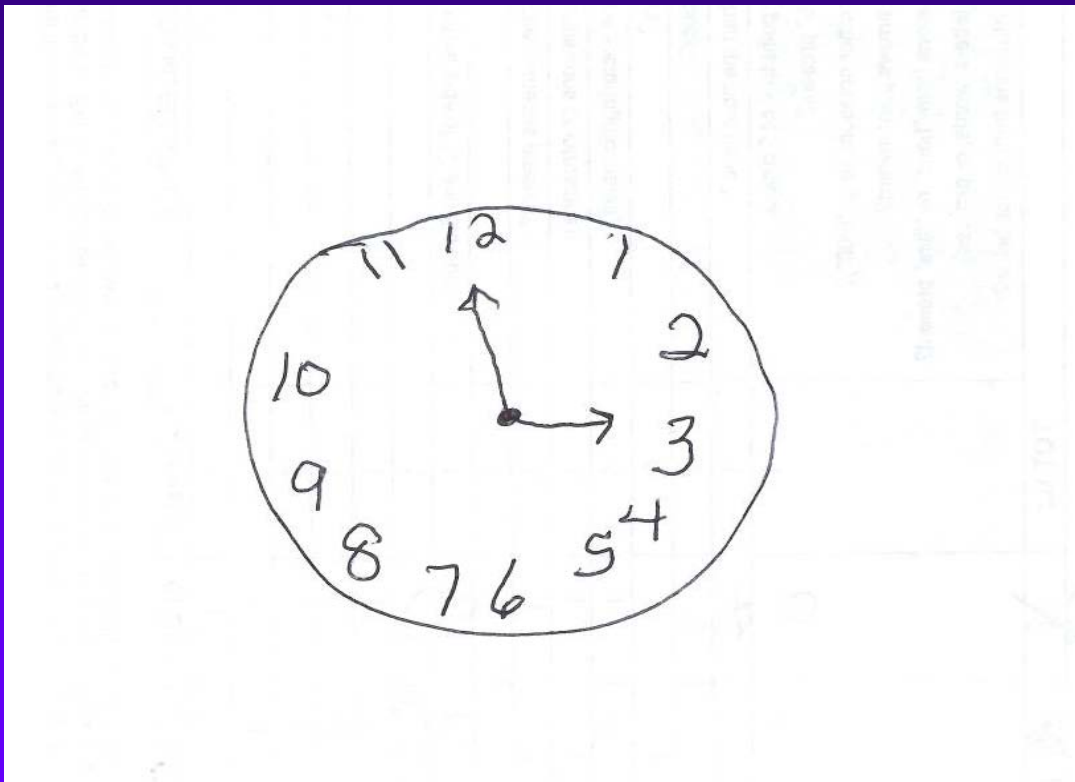
MMSE: 25

CLOX1: 11

CLOX2: 14

EXIT25: 23

Hour hand between 1 and 2 o'clock?



Age: 51 years

GDS: 9/15

MIS: 8

MMSE: 25

CLOX1: 12

CLOX2: 11

EXIT25: 20

Minute hand obviously longer than hour hand?



Age: 89 years

GDS: 7/15

MIS: 3

MMSE: 24

CLOX1: 6

CLOX2: 12

EXIT25: 35

None of the following

- Hand pointing to 4 or 5 o'clock
- "1:45" present
- Any other notations
- Any arrows point inward
- Intrusions from "hand" or "face" present
- Any letters, words, or pictures
- Any intrusions from circle below

Arrow pointing inward



Age: 85 years

GDS: 1/15

MIS: 2

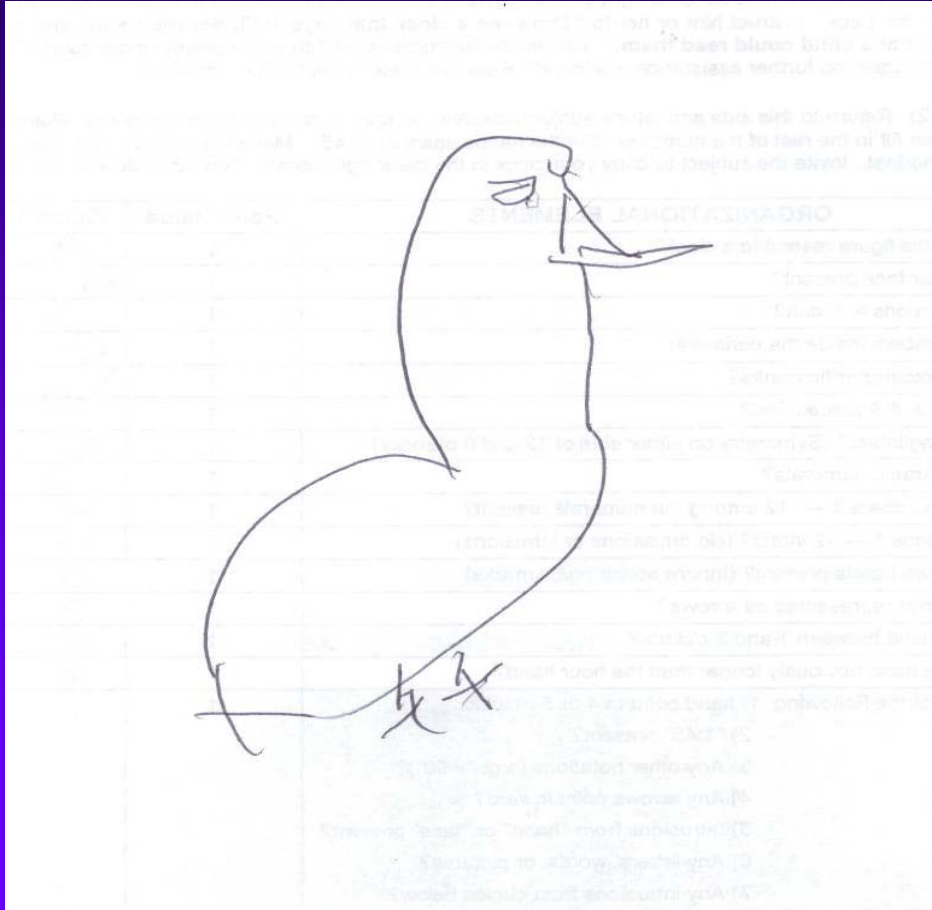
MMSE: 15

CLOX1: 7

CLOX2: 12

EXIT25: 36

Any letters, words or pictures



Age: 66 years

GDS: 4/15

MIS: 0

MMSE: 24

CLOX1: 2

CLOX2: 10

EXIT25: 32

Intrusion from "face"

Intrusion from circle below

Age: 60 years

GDS: 1/15

MIS: 8

MMSE: 30

CLOX1: 6

CLOX2: 13

EXIT25: 26



CLOX1

- $\leq 10/15$ represents the lowest 5th percentile for young adults.
- CLOX 1 correlates well with the EXIT25 ($r = -0.83$).
- CLOX 1 is more sensitive to executive function than similar clock-drawing tasks relative to the EXIT25.

CLOX2

- $\leq 12/15$ represents the lowest 5th percentile for young adults.
- CLOX2 correlates well with the Mini Mental State Exam ($r = 0.85$).

Questions???



- 38yr with HIV Dementia