Your choice of SVTs is fundamental to the Slick et al criteria

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Central to the criteria is the presence of cognitive symptom exaggeration or feigning of cognitive deficits

- Hence, we must be able to identify symptom exaggeration in a reliable way and, ideally, agree with each other at a very high level.
- If classification of exaggeration is unreliable, we will disagree with each other often.

Probable cognitive exaggeration or faking (MND) is indicated if there is:-

- "Poor performance on one or more ***well validated*** psychometric tests or indices designed to measure exaggeration or fabrication of cognitive deficits....".
- For practical purposes, this usually means "Failure on *one or more* ***well validated*** *symptom validity tests*".
- But what is a well validated SVT?

Authors refer to “adequate reliability and validity”, suitable norms etc.

- But point out that “current psychometric methods are in the early stages of development”.

Are these well validated?

- Rey 15 item test
- Amsterdam Short Term Memory Test
- Portland Digit Recognition Test
- Warrington's RMT Words
- Warrington's RMT Faces
- Test of Memory Malingering
- Word Memory Test
- MSVT
- Reliable Digit Span
- Victoria SVT
- B-test

More to the point, are they equivalent to each other?

- Do they agree with each other, allowing us to apply the Slick criteria consistently?
- Do we want an SVT to predict membership in one of two possible groups (e.g. MALINGERING or NOT, as with Slick et al criteria)
- Or do we want an SVT to indicate:-

a) Expected level of score on neuropsychological tests,

b) Reliability/validity of such test scores

c) Exaggeration in symptom reporting?

How we approach these questions determines how we validate these tests

1. When a person fails any SVT, what does this imply for other neuropsychological test scores?
2. Presumably that their validity is doubtful.
3. But what if they fail one SVT and pass another?

Neuropsychologist 1, Dr. Lee uses the WMT Windows as the only SVT and is happy with it

Neuropsychologist 2, Dr. Nicklaus, uses the TOMM as his only SVT and he is quite happy with it.

They both say that, if patients fail the SVT, their test data are doubtful but, if they pass, malingering is ruled out

- For example, Dr. Nicklaus writes:

“ Mr. Smith showed no signs of poor effort. In fact, he scored 100% correct on the TOMM”.

- But what if we give both tests?

- How often do they agree?

Comparing TOMM and WMT failures in 1,315 cases

	Word Memory Test (WMT) Green's Publishing					
	1) Gervais data, Canada n=1,046					
	WMT **Pass**	**WMT** *Fail*				
TOMM ***Pass***	**698** **Agree**	240 Disagree				
TOMM *Fail*	6 Disagree	**102** **Agree**				

Word Memory Test (WMT)

2) Moss data, England, n=269

		WMT **Pass**	**WMT** *Fail*
TOMM ***Pass***		**122** **Agree**	90 Disagree
TOMM *Fail*		2 Disagree	**55** **Agree**

Word Memory Test (WMT)

		Samples 1 & 2 combined N=1,315	
		WMT Pass	**WMT** *Fail*
TOMM ***Pass***		820 Agree	330 Disagree
TOMM *Fail*		8 Disagree	157 Agree

Applying the Slick criteria, there will be disagreement in 338/1315 cases if one uses only TOMM and another uses only WMT

	Word Memory Test (WMT)					
					Samples 1 & 2 combined N=1,315	
	Pass	*Fail*	Pass	*Fail*	WMT Pass	WMT *Fail*
TOMM ***Pass***					62.3% Agree	25.0% Disagree
TOMM *Fail*					.06% Disagree	11.9% Agree

Virtually all poor effort cases detected by TOMM were also detected by WMT

- Less than 1/186 cases failed TOMM and passed WMT.
- But 330/1315 (25%) failed the WMT and passed the TOMM.

These results are best explained by "false negatives" for the TOMM (i.e. undetected poor effort).

What does a low WMT effort score mean?

- (1) Disabling diseases of the brain do not cause scores as low as 82.5%, except in some extremely severe cases, who need 24 hours a day care;
- (2) Testable mentally handicapped adults scored 95% correct on the WMT effort measures;

- (4) None of the neurological patients tested in Holland and Spain failed the primary WMT effort subtests (Schmand, Gorissen and San Torres, 2005).
- Their neurological patients had a WMT DR score of 95% correct.
- Healthy controls 97% correct.

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Who scores in the 60% to 80% range?

- Patients with advanced dementia, aged 78 years and in a long term care institution (mean WMT effort=68%).
- Patients asked to fake memory impairment (mean WMT effort= 62%, Green, 2003).
- What would scores below 50% mean???

QUIZ TIME

In people with no brain disease, who score 50% or lower on WMT (i.e. much lower than advanced dementia)..

How many fail TOMM?

- A) **70%**
- B) **15%**
- C) **100%**
- D) **20%**

The winner is

- A) **70%** B) 95% C) 100% D) 20%
- i.e. 30% pass TOMM

Percentage failing TOMM by level of effort on the WMT (Gervais data)

*WMT mean effort score	% failing WMT	% failing TOMM	N	*Mean WMT % correct	Std Dev.	Mean CVLT Short delay recall	Std Dev.
91-100%	0%	**0%**	620	97%	3	11.1	3.1
81-90%	60%	**0%**	201	87%	3	8.9	3.3
71-80%	100%	**20%**	93	76%	3	8.8	3.3
61-70%	100%	**40%**	66	67%	3	6.9	2.6
51-60%	100%	**70%**	43	56%	3	6.8	2.5
50% or lower	**100%**	**70%**	23	**44%**	4	4.3	2.6

WORSE THAN CHANCE ON WMT

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61-70%	100%	**40%**	66	67%	3	6.9	2.6
51-60%	100%	**70%**	43	56%	3	6.8	2.5
50% or lower	**100%**	**70%**	23	**44%**	4	4.3	2.6

30% of cases with mean WMT of 44% pass TOMM

Why did they score 50% or lower on WMT, despite no brain disease?

Whereas children in grade 4 with serious conditions like FAS had a mean of 95%? (Flaro data).

And why did 30% of these cases pass TOMM?

In reverse: WMT failure by level of effort on TOMM (Gervais)

TOMM TRIAL 2		% failing WMT	N	Mean WMT effort scores	Std Dev.
45 – 50	All pass TOMM				
40 – 44	All fail TOMM				
35 – 39					
30 – 34					
25 – 29					
<25					

- ***What percentage in this range will fail the WMT?***

WMT failure by level of effort on TOMM (Gervais)

TOMM TRIAL 2		% failing WMT	N	Mean WMT effort scores	Std Dev.
45 – 50	All pass TOMM	30%	938	91	10.20
40 – 44	All fail TOMM	90%	41	69	11.99
35 – 39		90%	26		10.95
30 – 34		100%			7.53
25 – 29		100%	14		12.09
<25		100%	11	49	9.49

Nearly everyone failing TOMM also fails WMT

WMT failure by level of effort on TOMM (Gervais)

TOMM TRIAL 2	**% failing TOMM**	**% failing WMT**	**N**	**Mean WMT effort scores**	**Std Dev.**
45 – 50	**All pass TOMM**	**30%**	**938**	**91**	10.20

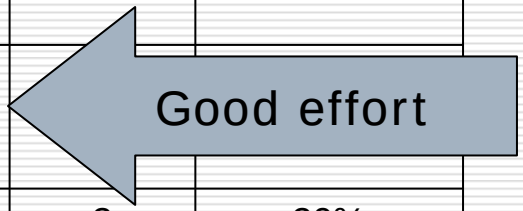
But 30% of TOMM passers fail WMT

This is a problem for the “fail one or more criterion” because it all depends which SVT you use.

Poor effort is not an all or nothing phenomenon.

Effort is a matter of degree

Pattern of effort test failure	N	Mean WMT	Std. Dev.	Mean TOMM Trial 2 out of 50	Std. Dev.	% of group failing CARB
1) Pass both	698	96%	4	50		
2) Fail only TOMM	6	93%	4	40	3	20%
3) Fail only WMT	240	77%	10	49	1	30%
4) Fail both	102	**62%**	12	35	8	70%



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Extremely poor effort

CVLT short and long delayed free recall scores

Pattern of effort test failure	N	**Mean SD Free Recall/16**	Std. Dev.	**Mean LD Free Recall/16**	Std. Dev.
1) Pass both	698	**10.9**	3.2	**11.3**	3.2
2) Fail only TOMM	6	8.4	4.9	9.0	5.4
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		P<.0001		P<.0001	

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Extremely poor effort

Memory Complaints on MCI by TOMM-WMT failure

Pattern of effort test failure	N	Mean MCI score as % of maximum	Std. Dev.
1) Pass both	658	21%	15
2) Fail only TOMM	6	51%	28
3) Fail only WMT	228	**32%**	19
4) Fail both	98	50%	19

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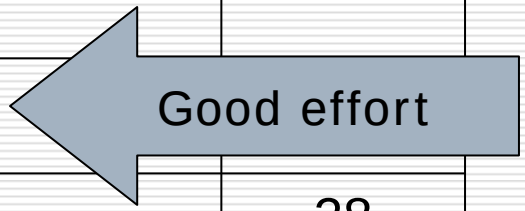

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Extremely poor effort

How likely is it that someone would fail WMT but really be making a good effort?

- More information comes from independent simulator studies in English, German, Russian and Turkish

English WMT simulator studies

- Classification was **100%** in patients asked to fake memory impairment (Green et al., 2002)
- **100%** in recent international multi-center study (WMT manual Appendix E).
- It was **97%** in sophisticated volunteer simulators, mainly psychologists and physicians (Iverson, Green and Gervais, 2002).
- In an independent replication study, the WMT was **100%** accurate in differentiating good effort from simulated impairment (Tan, Slick, Strauss & Hultsch, 2002).

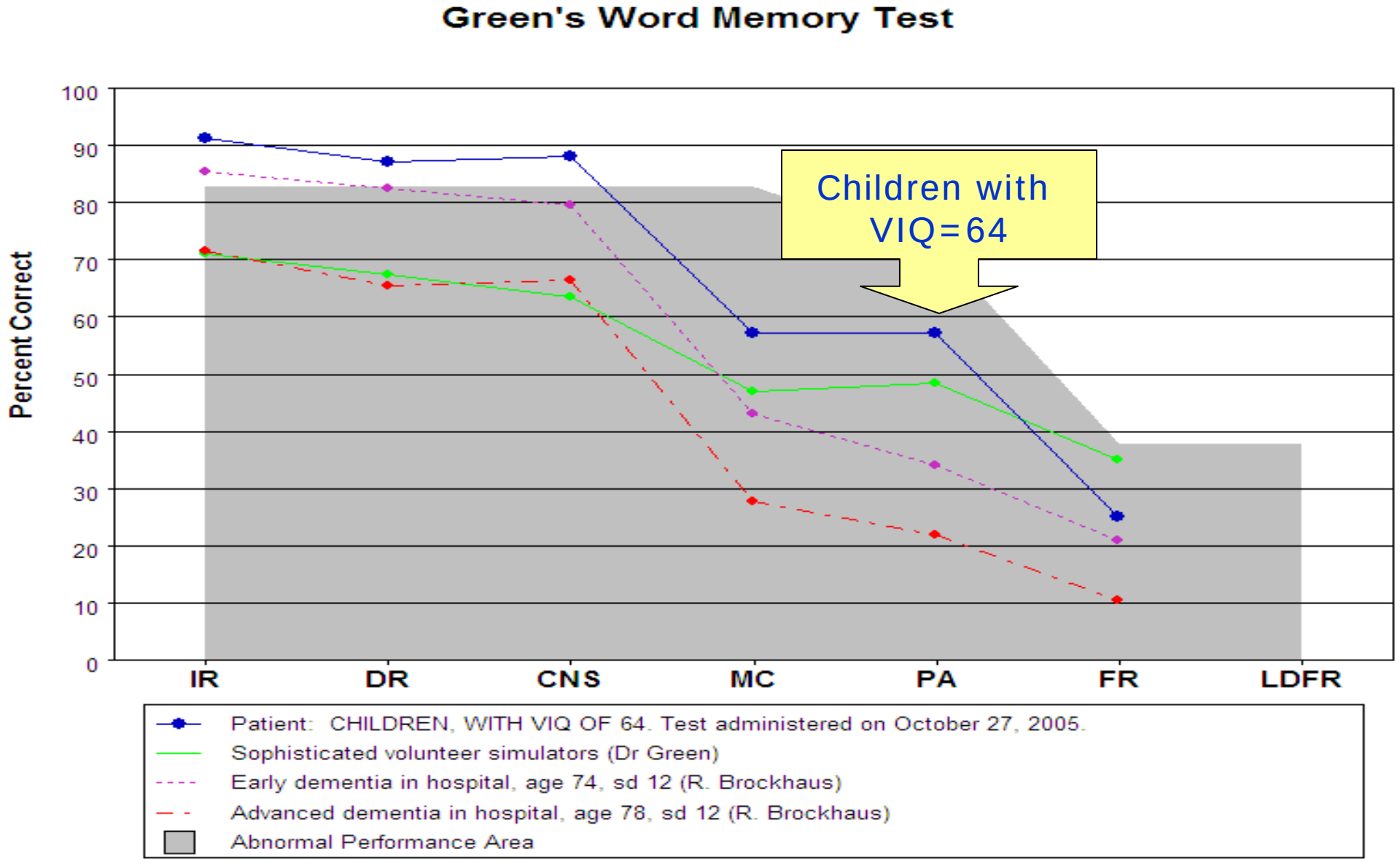
German, Russian & Turkish WMT simulator studies

- 100 good effort volunteers / 29 simulators; Classification accuracy of WMT was **100%** (Brockhaus & Merten, 2004, German).
- It was **99%** and **100%** in two Turkish studies (Brockhaus, Peker & Fritze, 2005)
- and it was **100%** in a Russian study (Tydecks, Merten, & Gubbay, in press).

99% or 100% hit rate

- Thus, when we know whether people are faking impairment or not in simulator studies, the WMT is close to 100% accurate
- There are almost no false positives
- [The MSVT is of about the same accuracy as WMT in simulator studies].
- In addition, it is important to note that simulators have a specific WMT pattern that makes no sense

Simulators vs dementia patients



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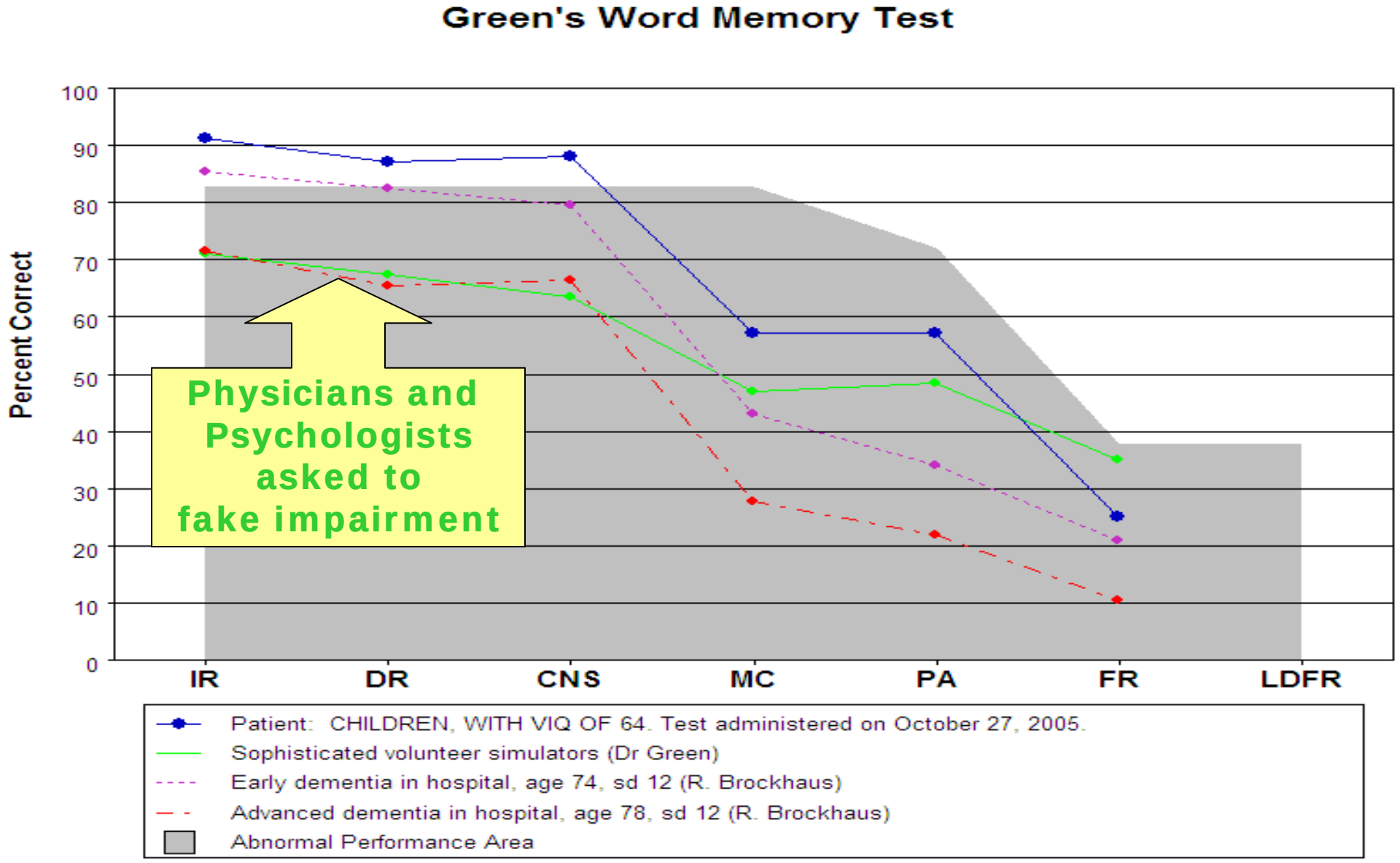
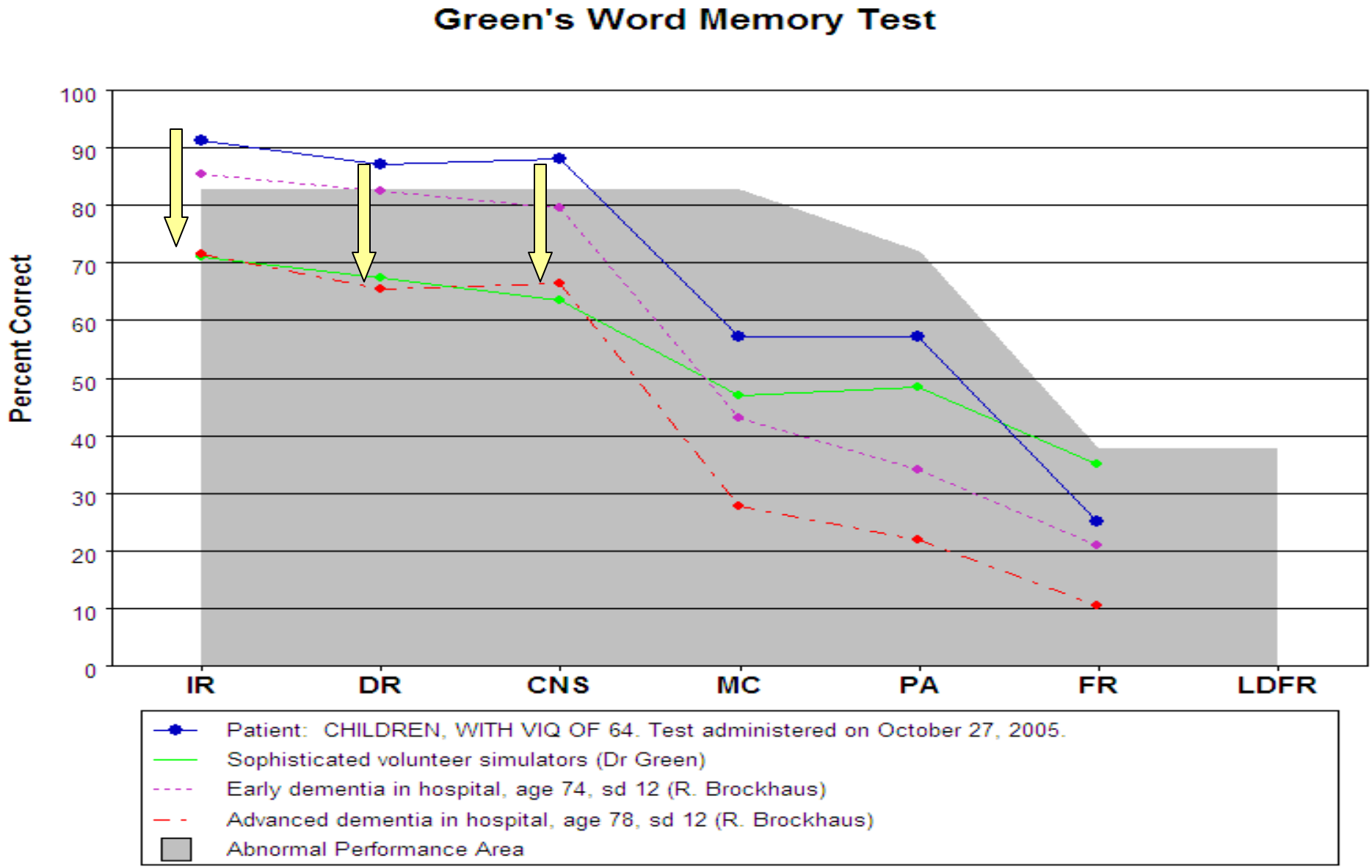


Simulators vs children with VIQ 64



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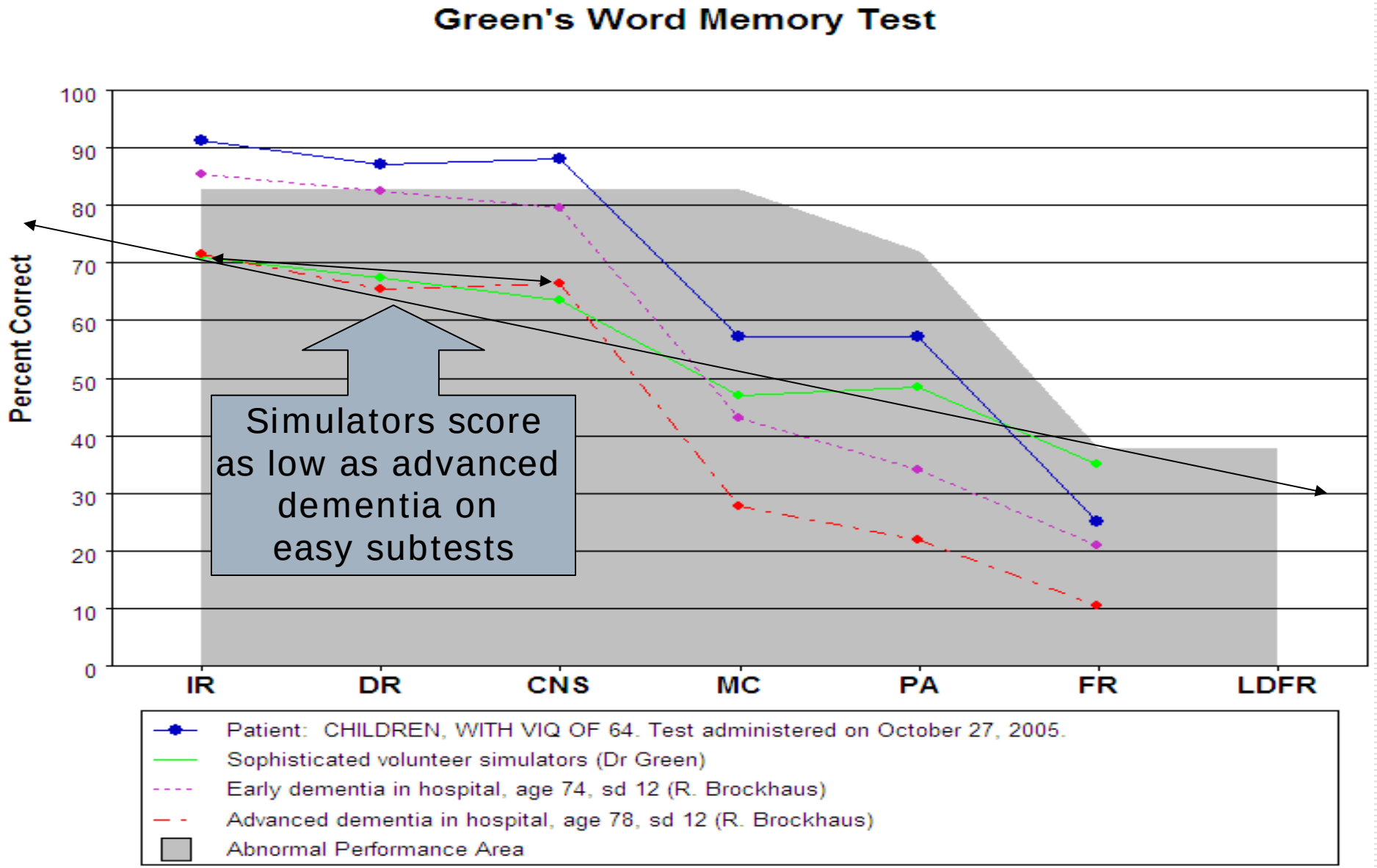

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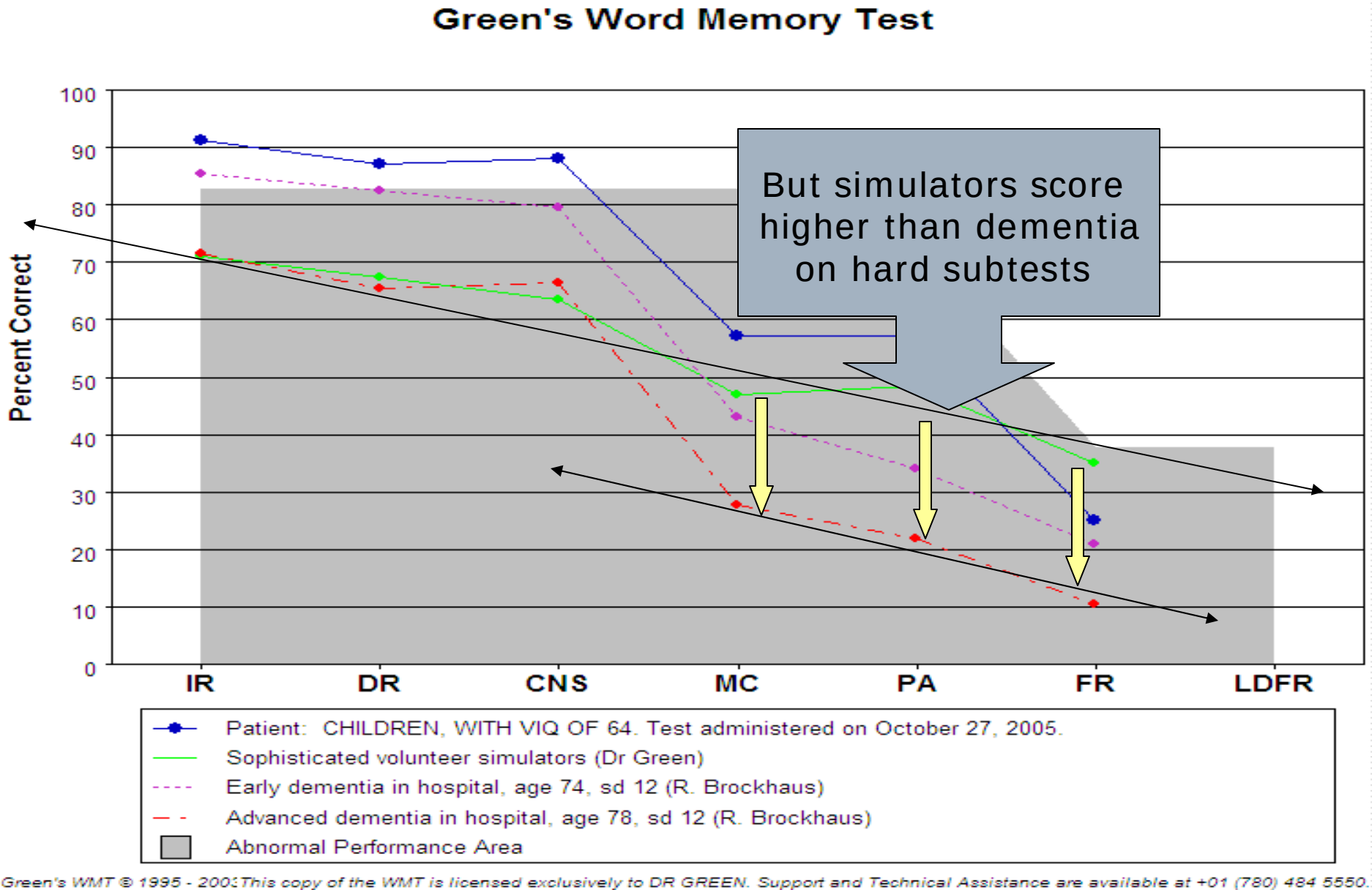
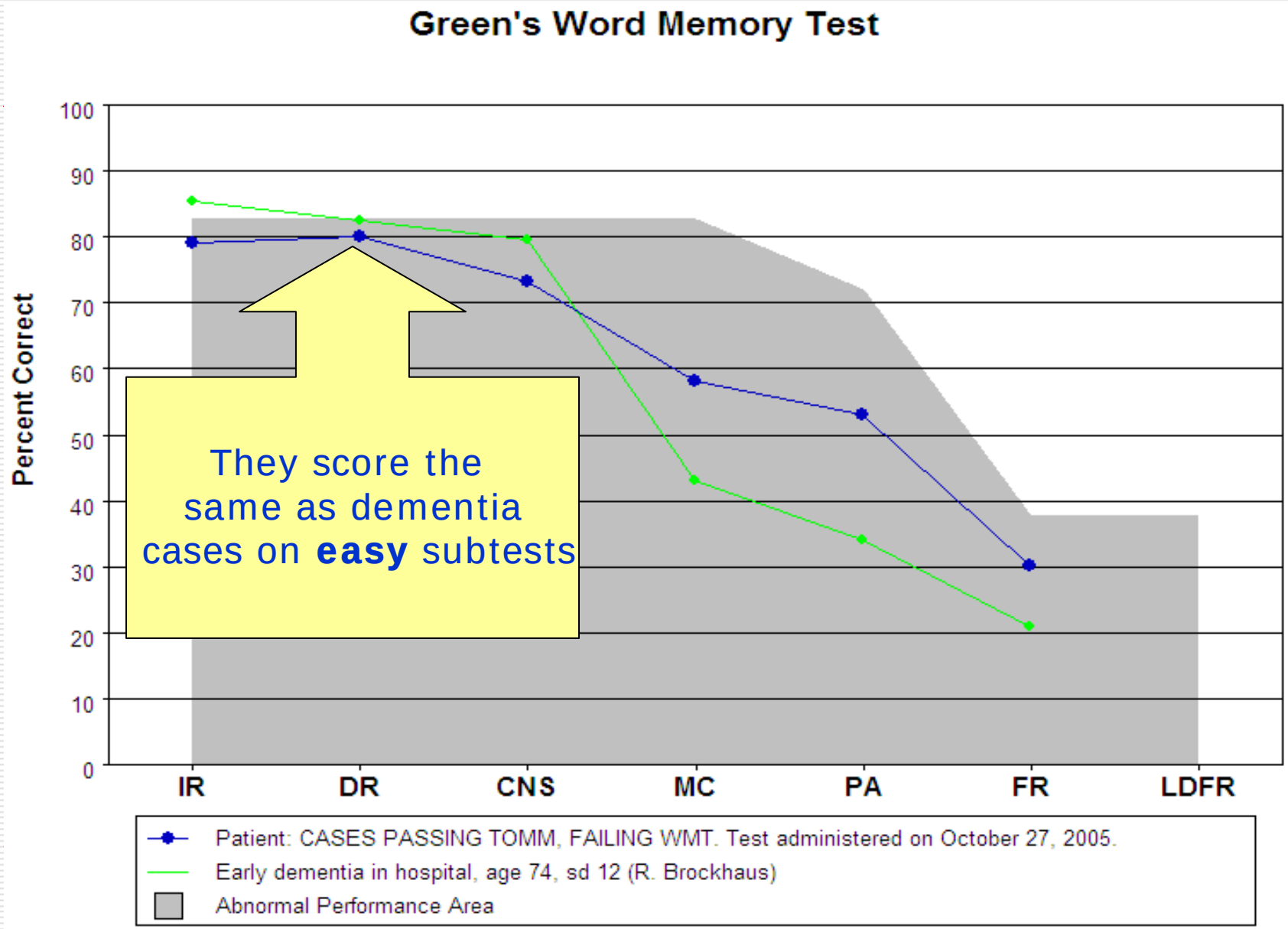
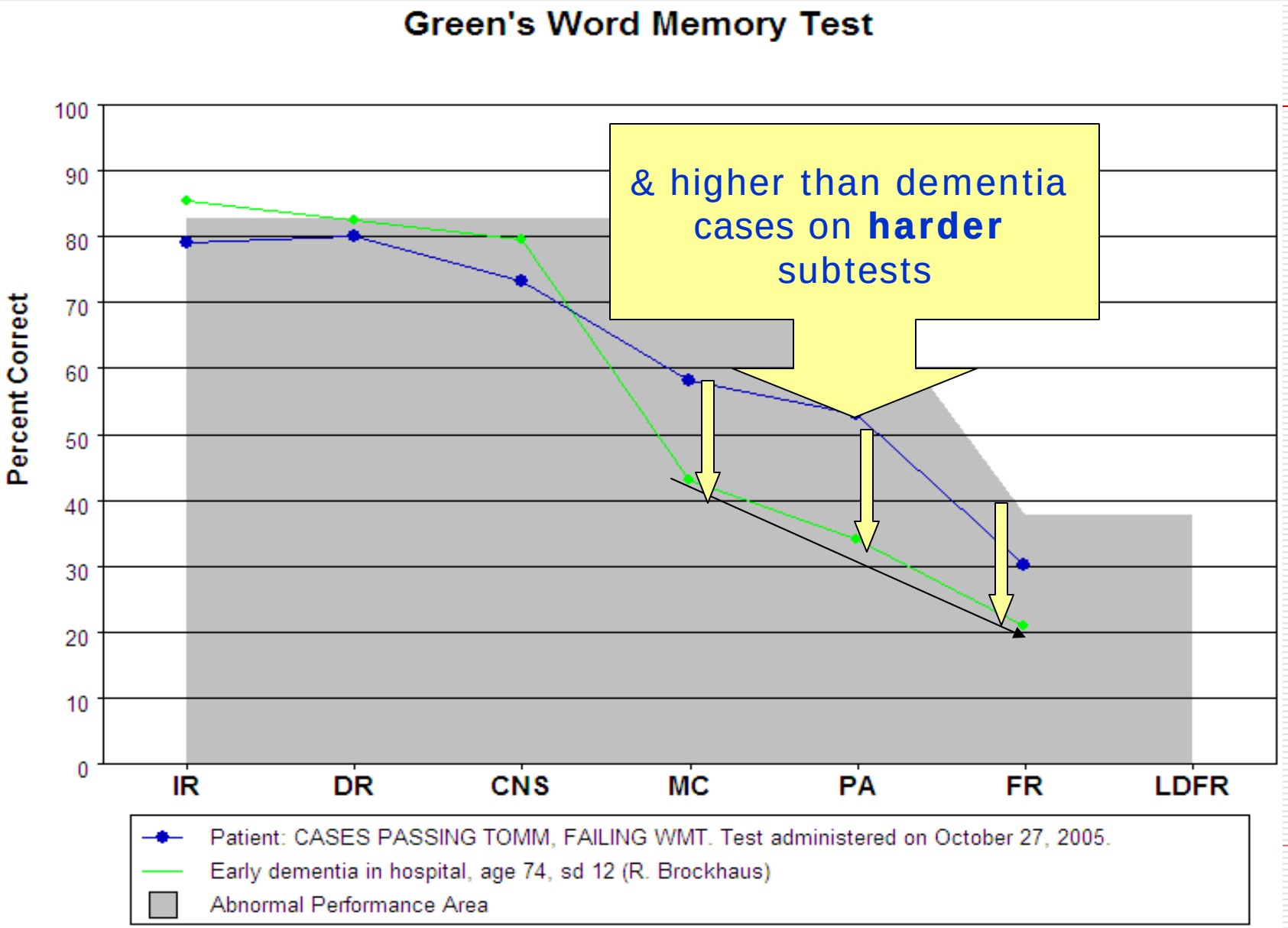


Q) So what is the profile in those who pass TOMM & fail WMT?

A) They look just like simulators





"Well validated SVTs?" in Slick criteria

- Many would call both TOMM and WMT well-validated
- However, conclusions within the Slick et al criteria will be very different depending on whether TOMM or WMT is used. Imagine the same comparisons with any combination of SVTs you choose.
- What about CARB?

CARB versus WMT failure (very similar to data from Gervais in over 1,000 cases)

	Pass WMT	**Fail WMT**
Pass CARB	**787**	***221 disagree***
Fail CARB	*35 disagree*	**148**

No drop in CVLT in CARB only failures

Effort Sub-group	N	SD Free	Std. Dev.	LD Free	Std. Dev.	Recognition Hits Mean	Std. Dev.
1)Pass both	787	**10.3**	3.2	10.9	3.2	**14.4**	1.7
2) Fail Only CARB	35	**10.4**	3.0	10.6	3.6	**14.1**	1.8
3) Fail Only WMT	221	7.2	3.4	7.6	3.7	12.5	3.0
4) Fail both	148	6.5	3.2	6.0	3.6	10.5	3.5

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CVLT does drop in those failing only WMT

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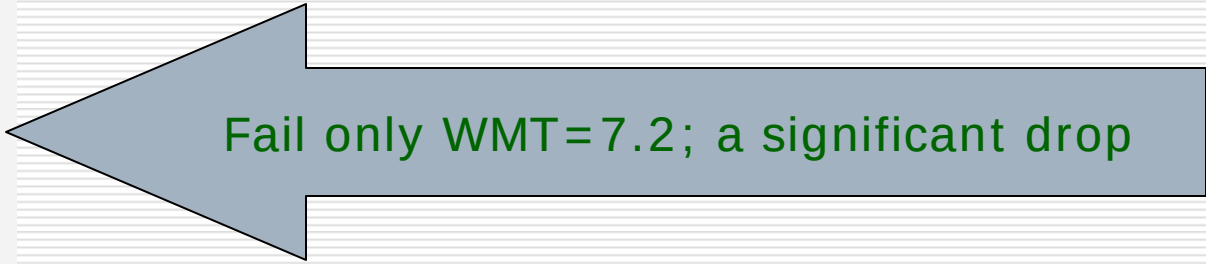

But CARB involves digits and WMT is a verbal task like CVLT

- What about Trail Making or Category Test?
- Maybe CARB predicts these better?

Those failing CARB are no different than those passing both SVTs

Effort Subgroup	N	Mean Category Test errors	Std Dev.	N	Mean Trail Making B (secs.)	Std Dev.
1) Pass both	638	57			79	53
2) Fail only CARB	22	57	32	22	87	31
3) Fail only WMT	151	70	27	173	123	92
4) Fail both	67	78	32	97	157	128

But failing WMT only does involve a significant drop in performance on Category Test and Trails

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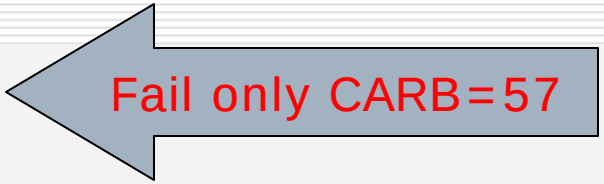

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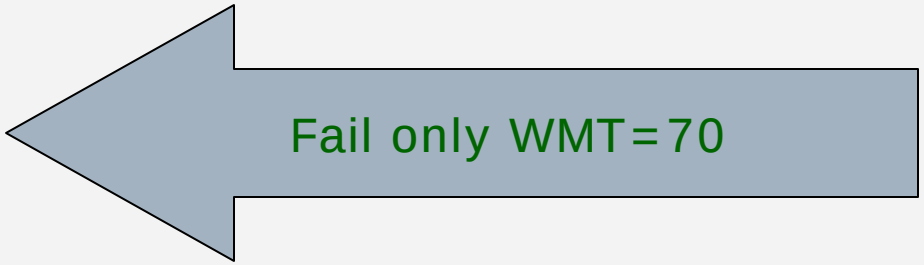

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What about the MSVT, which is even easier than WMT?

- Half the word pairs, easier word pairs etc.
- Takes only 5 minutes.
- Children in grade two scored a mean of 97% to 99% correct on recognition
- MSVT had a 99% hit rate in a Brazilian simulator study with over 300 cases

17% fail MSVT, pass TOMM

	Pass MSVT	Fail MSVT
Pass TOMM	**142**	*33* *disagree*
Fail TOMM	*5* *disagree*	**15**

	N	Mean CVLT Free Recall	Std. Dev.	Mean CVLT Recog. Hits	Std. Dev.
1) Pass TOMM & MSVT	132	10.8	3.3	**15**	1.6

If someone failed TOMM, would you assume their effort is poor?

	N	Mean CVLT Free Recall	Std. Dev.	Mean CVLT Recog. Hits	Std. Dev.
1) Pass TOMM & MSVT	132	**10.8**	3.3	**15**	1.6
2) Fail only TOMM	5	**8.8**	2.5	13	1.9

If so, you are right.
Failing TOMM does indicate poor effort.

	N	Mean CVLT Free Recall	Std. Dev.	Mean CVLT Recog. Hits	Std. Dev.
1) Pass TOMM & MSVT	132	10.8	3.3	**15**	1.6

But what if they pass TOMM and fail MSVT

as in 17% of cases?

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Within Slick et al criteria, would they be "failing a well validated SVT" and malingering cognitive impairment?

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Their CVLT score is reduced, presumably owing to poor effort

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1) Pass TOMM & MSVT	132	10.8	3.3	**15**	1.6

And if they fail TOMM & MSVT their effort is even lower

3) Fail only MSVT	30	**8.6**	2.9	**13**	2.5
4) Fail both	14	**7.1**	2.8	13	2.8
		P<.001		P<.001	

So, whenever we compare different SVTs, we see many differences in outcome

- Dr. Lee uses WMT and will conclude malingering using the Slick criteria
- Dr. Nicklaus uses TOMM in the same case and will not do so
- The same problem arises when we compare other SVTs
- It all depends which SVT you choose

Reliable Digit Span by WMT: Disagreement is more symmetrical

	Reliable Digit Span	
	Pass >7	Fail <=7
Pass WMT	102	20
Fail WMT	30	39

But failing only RDS is *not* linked with low CVLT recall score

	N	Mean CVLT SD Free Recall	Std. Dev.
1) Pass both	95	11.7	3.1
2) Fail only RDS	17	10.7*	2.6
3) Fail only WMT	28	7.5	3.8
4) Fail both	31	6.7	3.5

P<.0001

* = not significantly different from group 1

Failing only WMT is linked with significantly reduced CVLT scores

	N	Mean CVLT SD Free Recall	Std. Dev.
1) Pass both	95	11.7	3.1
2) Fail only RDS	17	10.7*	2.6
3) Fail only WMT	28	7.5	3.6
4) Fail both	31	6.7	3.4

P<.0001

* = not significantly different from group 1

In the Slick et al criteria, the concept of *failure on one or more well validated SVTs* implies that many SVTs are fairly comparable to each other.

- But failing one SVT does not have the same *implication* for neuropsychological test scores as failing another.

- We need to study *neuropsychological data and symptom self ratings* in people failing a specific SVT or combination of SVTs
- One future research project is to make tables showing probabilities of failing effort tests based on the results of multiple neuropsychological tests.

One example: probability of failing WMT with CVLT SD Free Recall of 4-6

SD FREE RECALL RANGE	N	% failing WMT
0 - 3	80	81%
4 - 6	236	60%
7 - 9	373	35%
10-12	359	22%
13 +	345	8%

probability of failing TOMM with CVLT SD Free Recall of 4-6

SD FREE RECALL RANGE	N	% failing TOMM
0 - 3	24	60%
4 - 6	125	20%
7 - 9	195	10%
10-12	212	0%
13 +	195	10%

This is a perspective within which we are interested in using SVTs to predict error in neuropsychological test data (i.e. valid or not)

- This is not the same as classifying someone as
- (a) malingering or (b) not malingering
- If we are going to use the Slick criteria, we must be cautious about which SVTs we choose to measure symptom exaggeration.

Your choice of SVTs is fundamental to the Slick et al criteria

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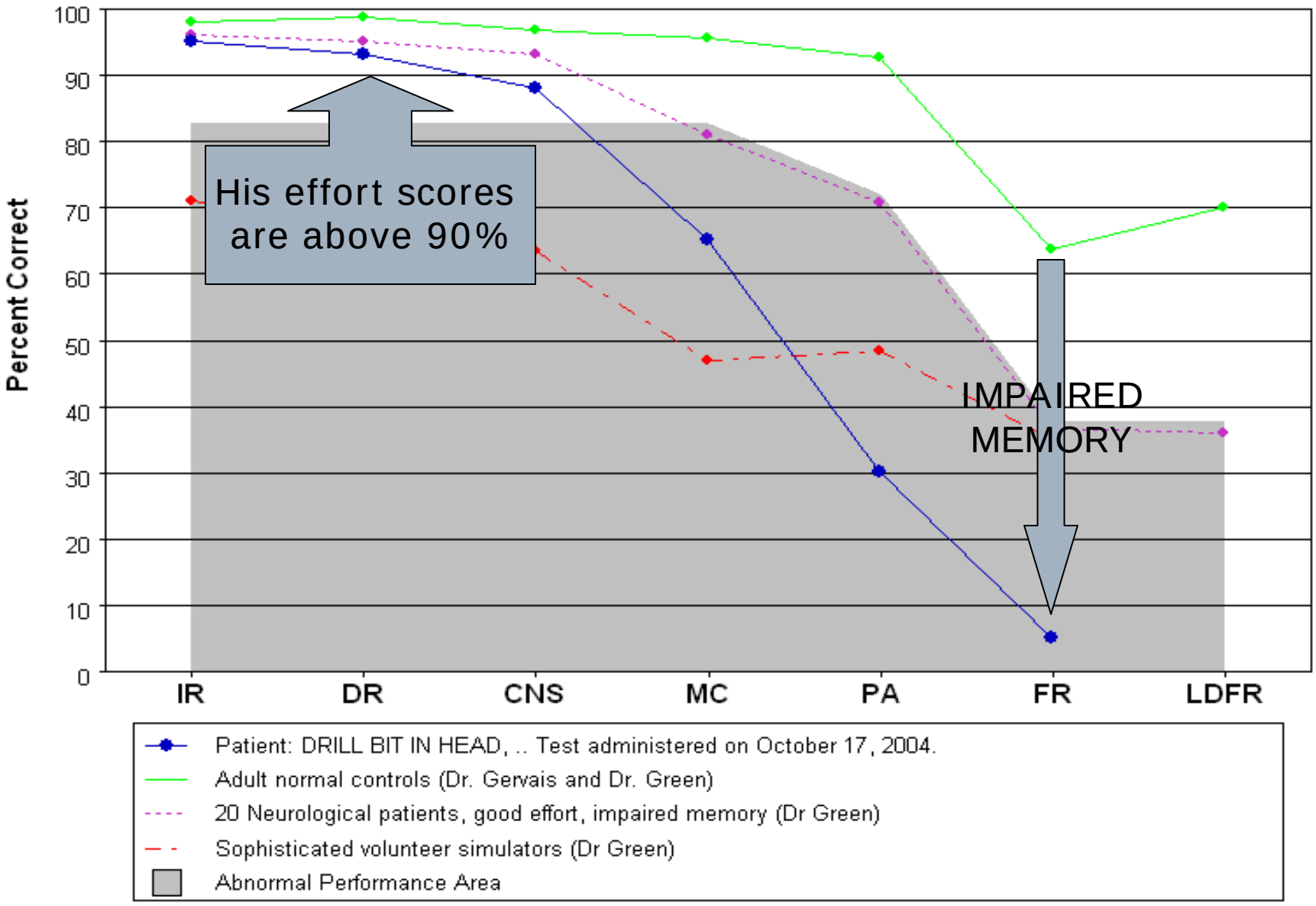
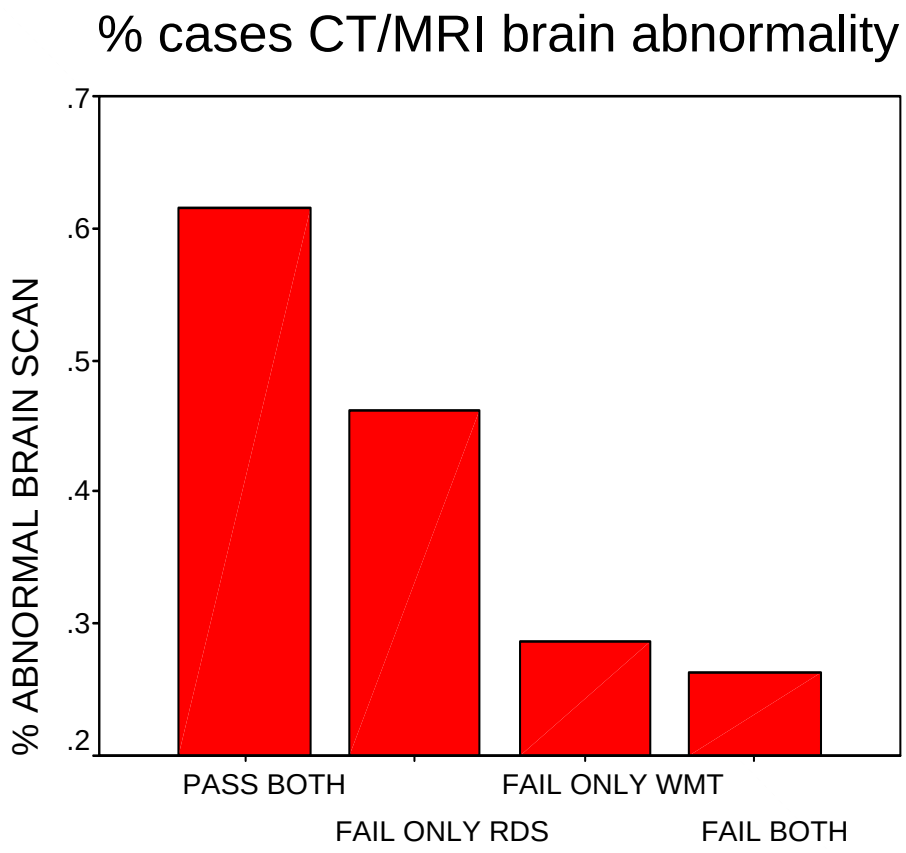
A man had a power drill bit driven through his left eye socket

- He had surgery for the profuse bleeding in the left frontal region
- He had Broca's Aphasia
- 3 months later he had a massive left middle cerebral artery stroke
- Now he had global aphasia
- Recently he died of a heart attack.

Green's Word Memory Test

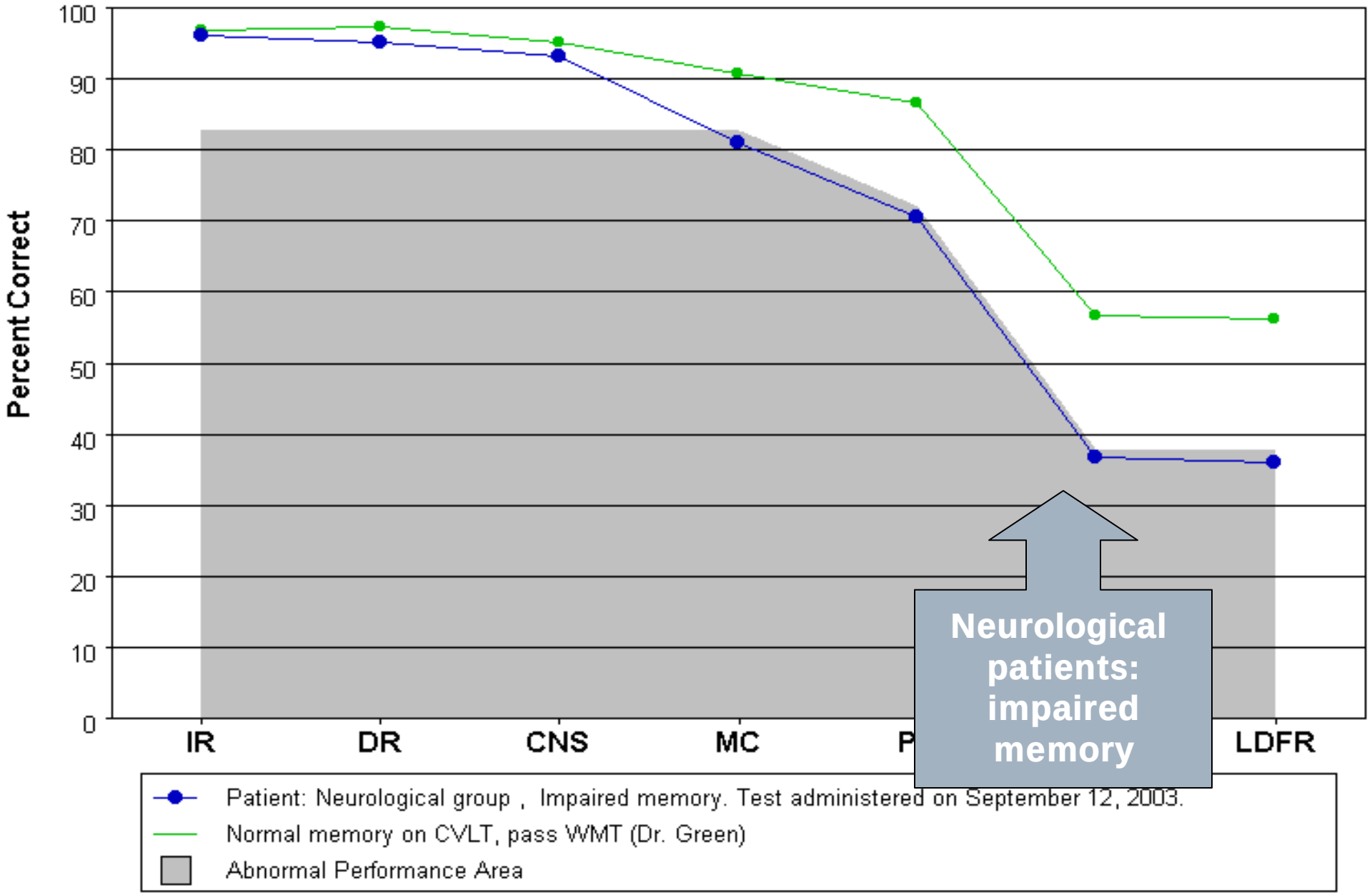


Those with the least brain abnormalities fail SVTs the most

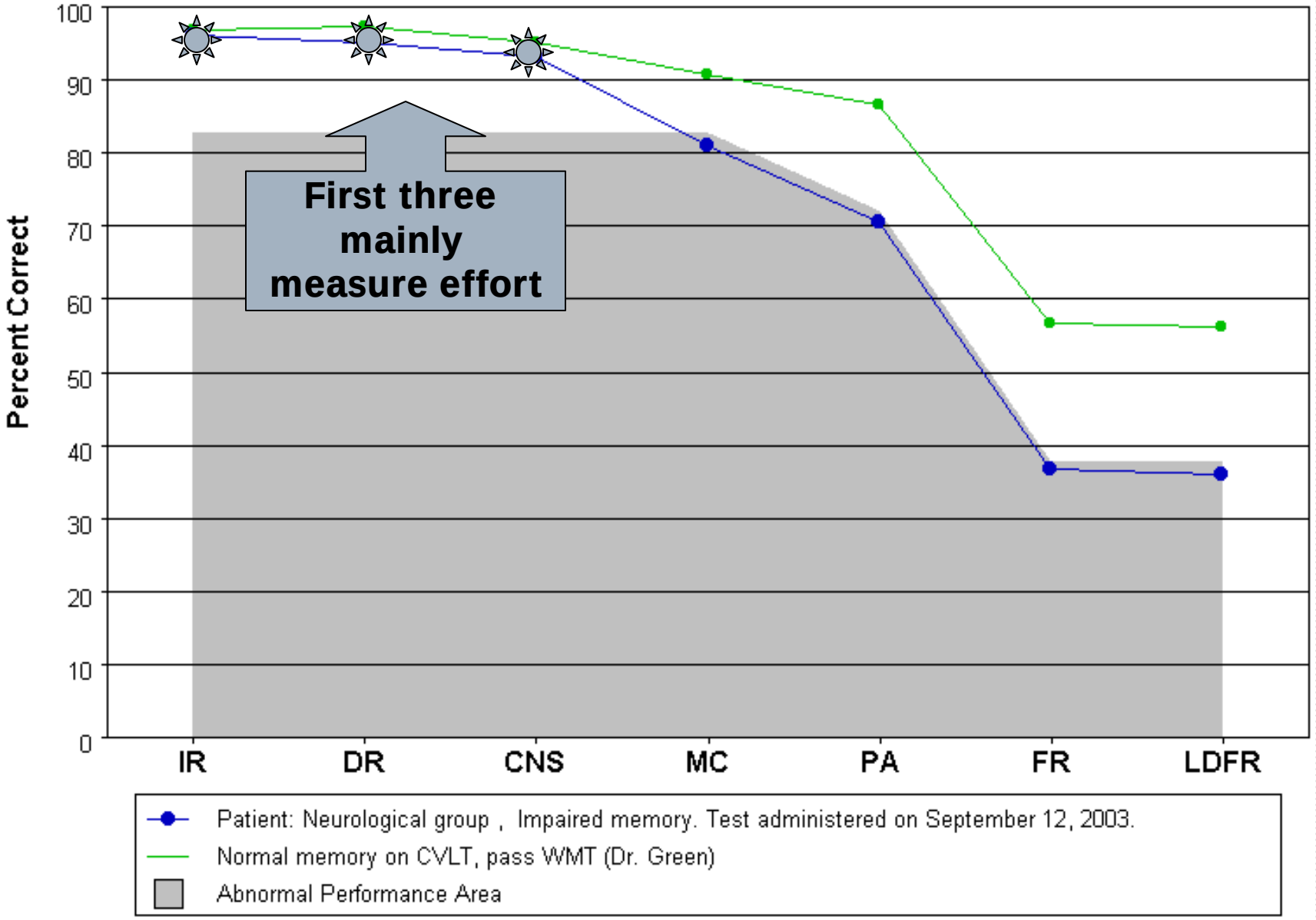


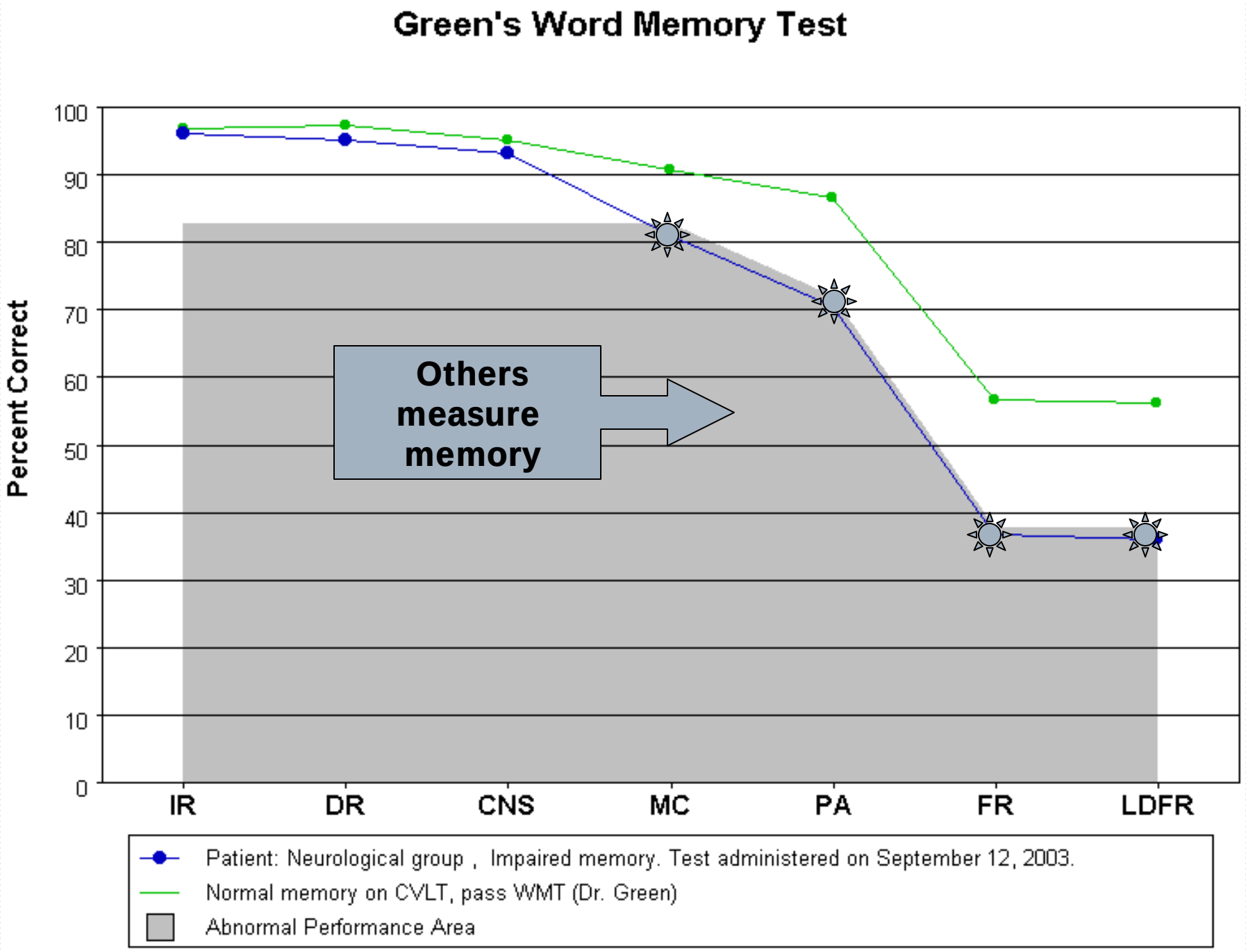
FAILURE ON SVT1 DOES NOT HAVE SAME IMPLICATIONS AS FAILURE ON SVT 2

Green's Word Memory Test

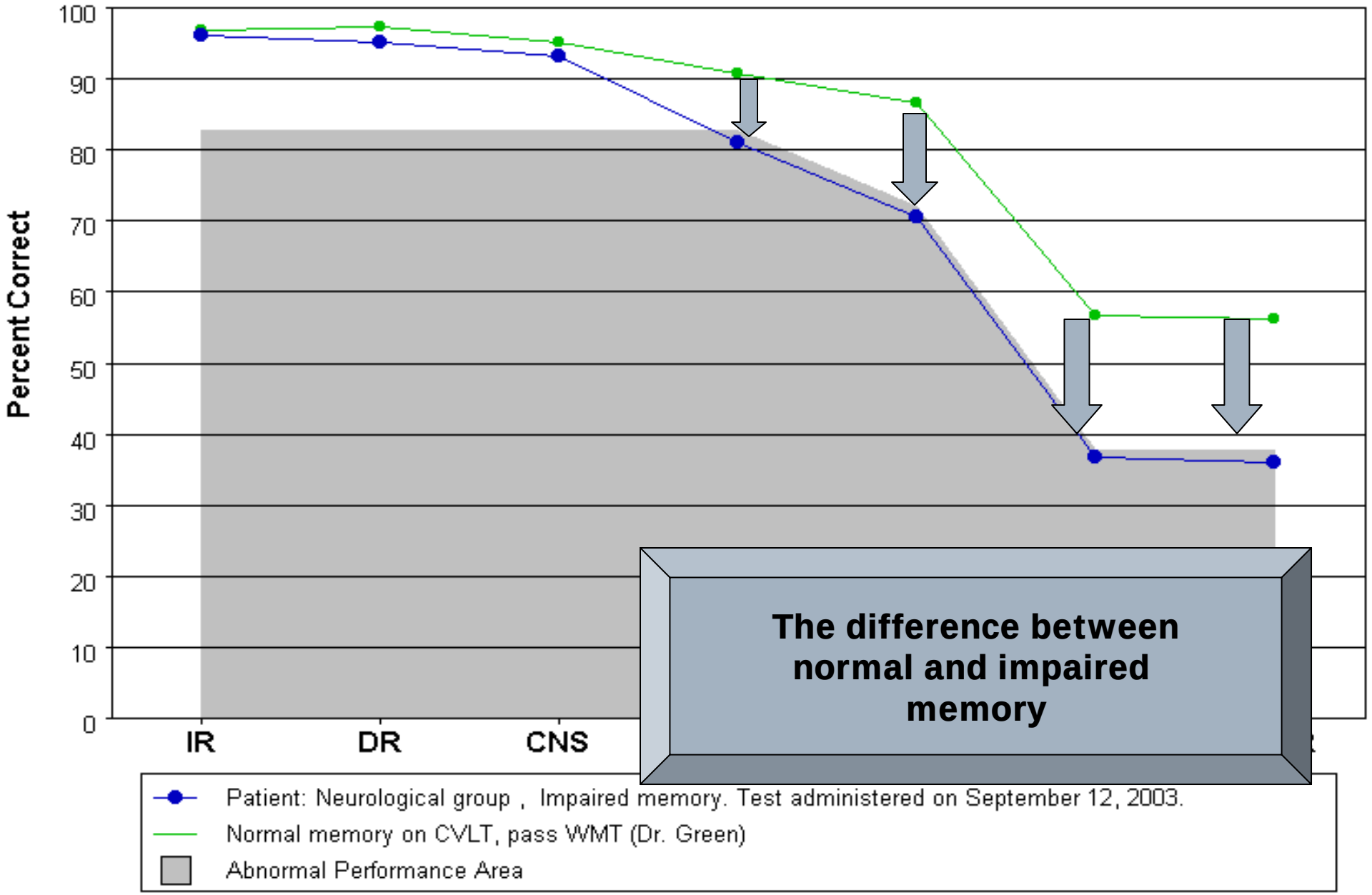


Green's Word Memory Test





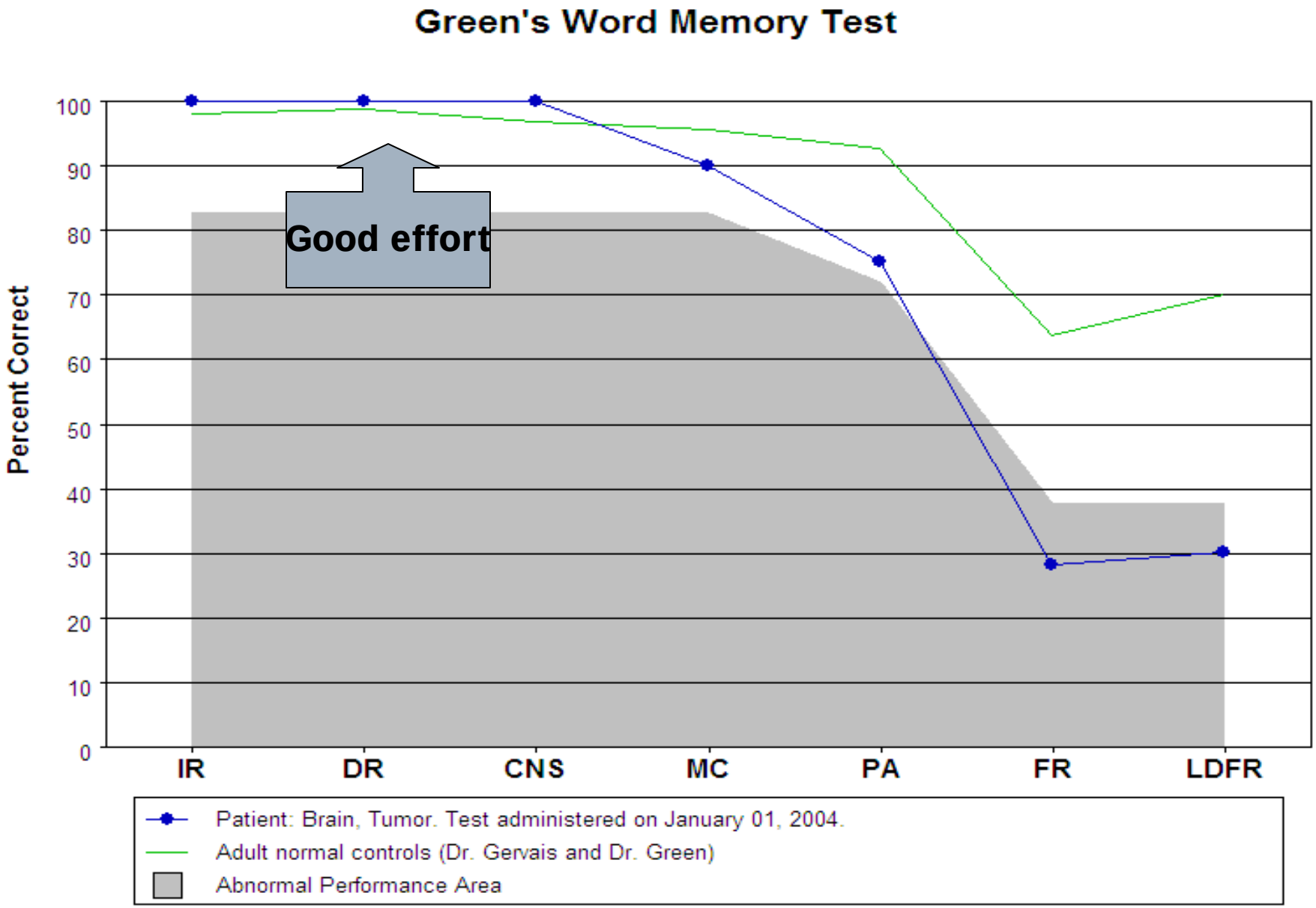
Green's Word Memory Test

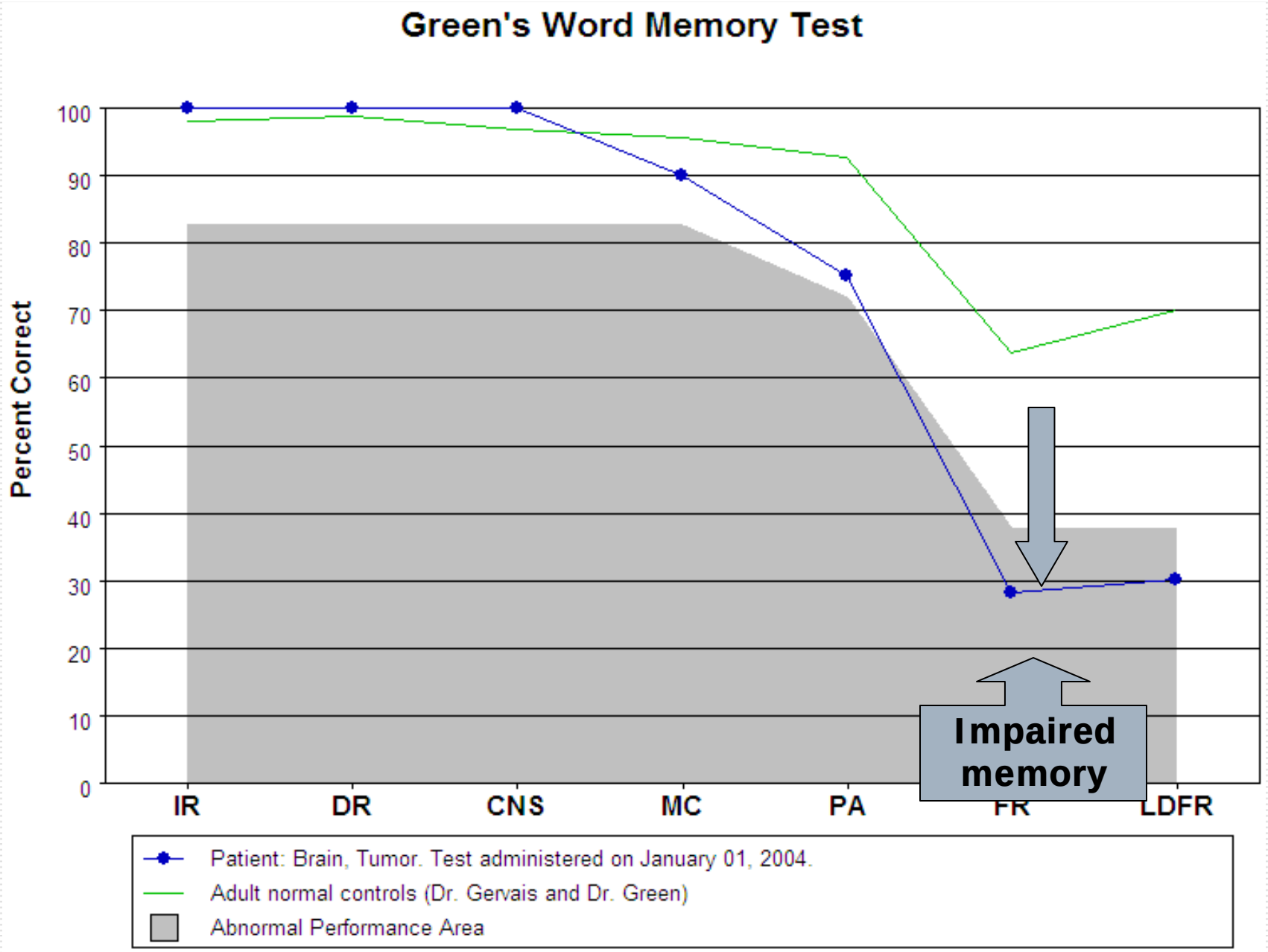


35 year old man had grapefruit-sized left temporal brain tumour removed

- **numerous cognitive deficits, blind in left eye, paralyzed on right side etc.**

He scored 100% on the primary effort subtests.





Dr. Lee and Dr. Nicklaus need to compare notes:-