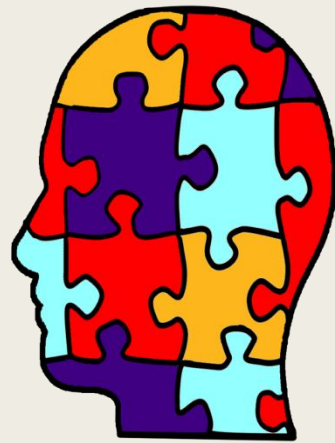




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Reclassification of behavioral criteria for MCS *plus*

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GOAL

Criteria for MCS *plus* are inconsistent in the current literature

First definition (Bruno et al, 2011):

- Command following
- Intelligible verbalization
- Intentional communication

Others :

- Command following only
- Object recognition, reproducible response to command and intelligible verbalization; while patients showing intentional communication were not considered as being in MCS minus

➔ Consensus for the diagnostic criteria of MCS *plus*

METHODS

We compared the level of disability (DRS) associated with different profiles of MCS *plus* features (CRS-R):

- command following
- intelligible verbalization
- intentional communication
- combination of two behaviors or more

We also included patients in MCS with no evidence of language function (i.e., MCS *minus*) as a contrast

METHODS

SRN DoC Program Database (n=272 DOC patients)

Inclusion criteria:

1. Acquired brain injury
2. At least 16 years old
3. Demonstrate at least one feature of MCS not present at admission
4. Between 2 and 20 weeks post-injury

Exclusion criteria:

1. Vegetative state
2. Patients who were not evaluated with the DRS or if the DRS assessment was completed more than 7 days after the day of the corresponding CRS-R

METHODS

Primary outcome: Degree of disability on the DRS at time of transition to MCS *plus* or *minus*.

Secondary outcome: Degree of disability on the DRS at time of discharge.

DRS on admission was used as a covariate to control for injury severity

We also compared time since injury at time of transition to MCS plus or minus, at time of admission and at time of discharge to control for possible confounder

RESULTS

120 met our inclusion criteria

Group	N	Diagnosis at admission / Etiology	DRS at admission	Time at admission (days post injury)	DRS at time of transition	Time at transition (days post injury)	DRS at discharge	Time at discharge (days post injury)
A3	39	18MCS - 21VS 25TBI - 14NTBI	22.56 ±2.58	43.85 ±13.42	19.23±3. 13	43.28±13 .43	13.23 ±5.36	118.615 ±82.73
O3	14	9MCS - 5VS 7TBI - 7NTBI	21.36 ±3.18	34.29 ±31.54	18.93±3. 49	59.00±43 .30	14.64 ±6.38	157.71 ±113.123
C1	12	4MCS - 8VS 6TBI - 7NTBI	22.00 ±2.26	41.59 ±32.65	19.83 ±2.16	59.58±37 .55	14.92±4. 72	145.58±9 2.59
A3 + C1 or O3	21	9MCS - 12VS 15TBI - 6NTBI	21.57 ±3.20	26.29 ±22.57	19.81 ±3.30	42.57±23 .35	14.09 ±3.78	118.95±8 2.60
C1 + O3	13	7MCS - 6VS 4TBI - 9NTBI	20.80 ±2.80	38.78 ±19.34	18.15 ±2.64	45.92 ±18.48	13.08 ±3.97	85.85± 27.51
All 3	12	9MCS - 3VS 7TBI - 5NTBI	19.92 ±2.31	30.08 ±13.52	16.08 ±2.27	41.42 ±14.59	10.83 ±3.24	98.67±36 .77
MCS minus	9	2MCS - 7VS 3TBI - 6NTBI	23.89± 1.26	41.33± 16.53	23.11± 0.53	63.00 ±32.88	21.22 ±1.72	100.33±3 1.67

RESULTS

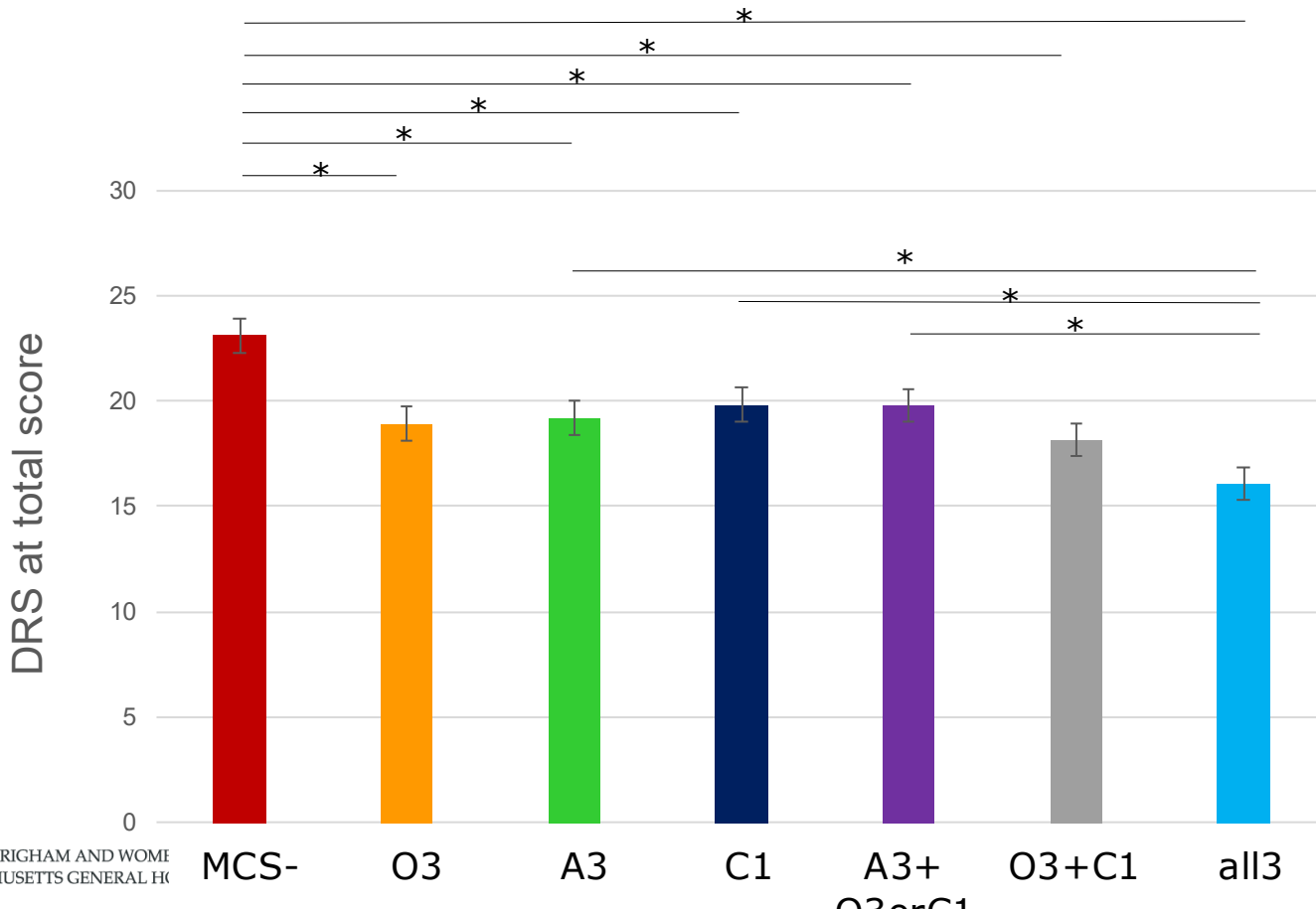
Group effect: $F=5.61$; $p<0.00001$

MCS minus > all groups ($p<0.01$)

All 3 < A3 ($p=0.002$), C1 ($p=0.0004$) and A3+C1orO3 ($p=0.0016$).

O3=A3=C1=A3+O3/C1=O3+C1

DRS at transition



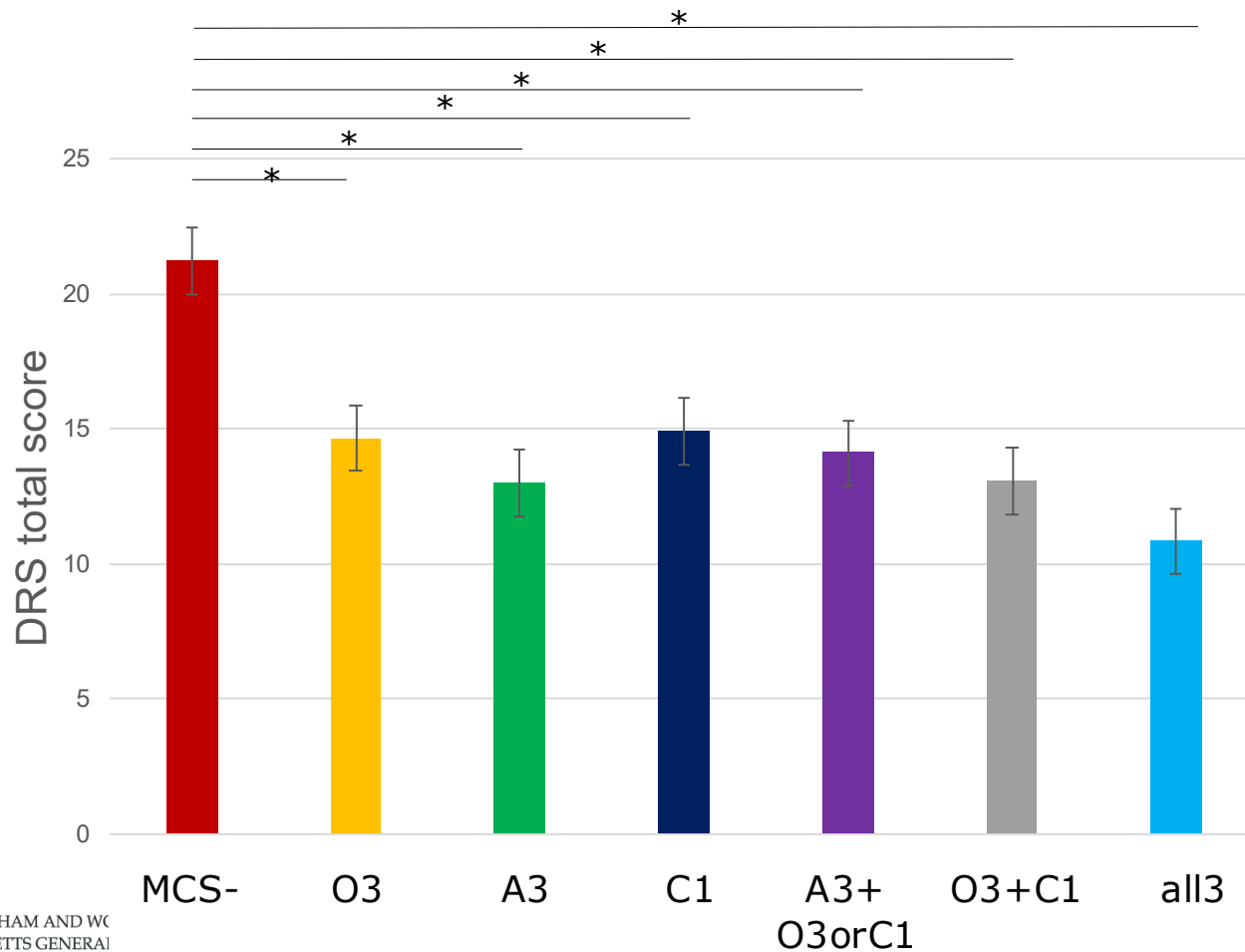
RESULTS

Group effect: $F=4.97$; $p=0.0002$

MCS minus > all groups ($p<0.01$)

$O3=A3=C1=A3+O3/C1=O3+C1=all3$

DRS at discharge



RESULTS

DRS at admission: Group effect ($F=2.95$, $p=0.0129$)
Post hoc → no significant difference between groups

Time at transition: No difference between groups ($F=1.91$; $p=0.0846$).

Time at discharge: No difference between groups ($F=1.42$; $p=0.2138$).

Time at admission: No difference between groups ($F=1.28$; $p=0.2737$).

CONCLUSIONS

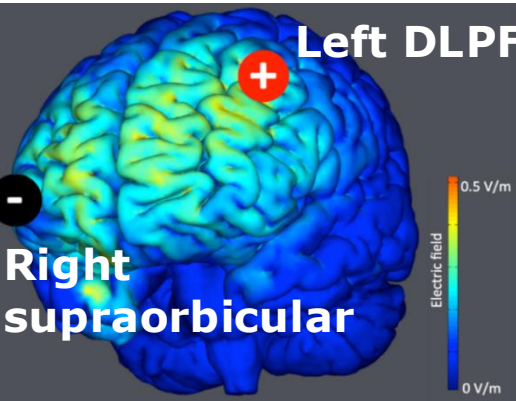
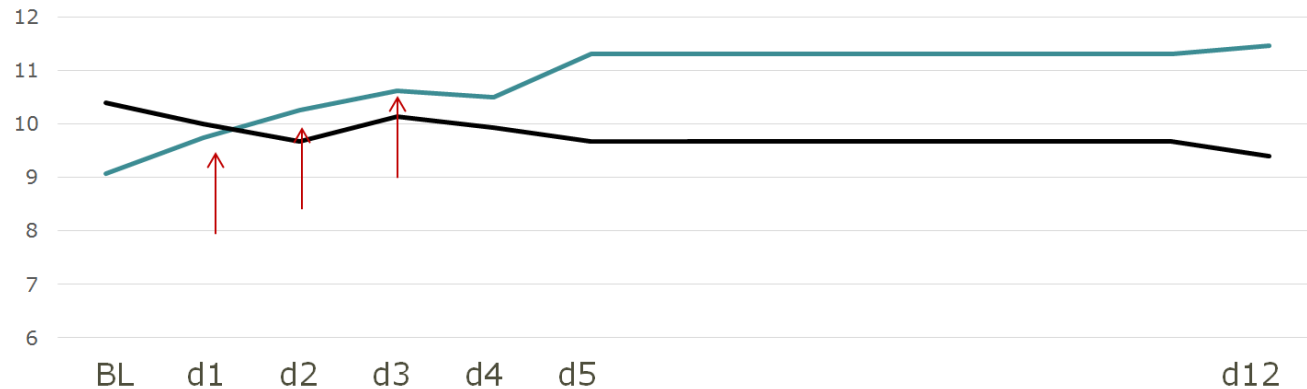
Based on patients' level of disability correlating with the presence or absence of language related behaviors, we defined the criteria for MCS *plus* as follow:

- (1) reproducible command following
- (2) intelligible verbalizations
- (3) intentional communication

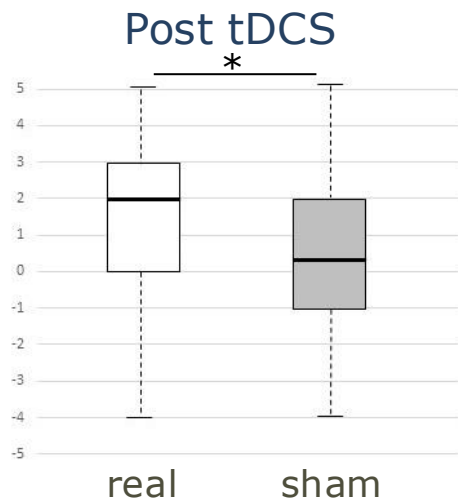


tDCS in DOC

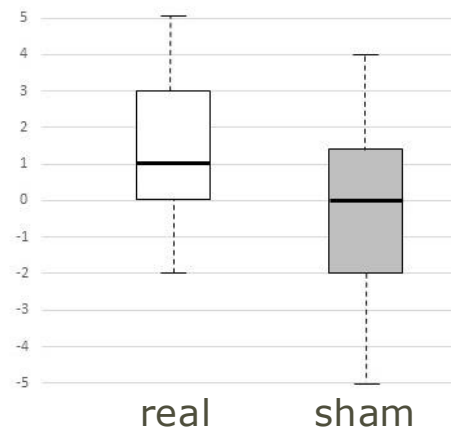
1-week tDCS trial



4-week tDCS trial – patients who received at least 80% of tDCS sessions



8 weeks follow-up



➡ Large multi-center RCT
62 VS/MCS per group
4-week protocol
3months follow-up
CRS-R, DRS, EEG

Thank you for your attention!

