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The Draw-A-Clock Contest: A Strategy for Improving Cognitive Status Assessment by Trainees



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ABSTRACT

Background: Historically, psychiatrists have been less inclined than neurologists to utilize pencil and paper tasks during bedside cognitive assessments.

Objective: The Draw-A-Clock Contest was established in 1986 at the University of Massachusetts to promote use of cognitive assessment tasks by psychiatry residents.

Methods: Used in neuropsychological assessments since the 1930's, clock tasks have been popular screening tools for executive function, praxis, visuospatial and constructive ability, often as part of dementia screening. Given its broad utility as a screening tool and the ease and speed of its administration, the Draw-A-Clock task (with hands set to 10 after 11 and no circle provided) was selected for use by UMass psychiatry residents, with further bedside assessment encouraged to explore any detected deficits. To encourage participation and foster clinical inquiry, residents are asked to submit clinically interesting de-identified patient clocks. For 20 years, clock contest entries have been collected each spring, with basic demographic, diagnostic, and process notes. Resident names are encoded, and entries are judged by a neuropsychiatrist (SB) and a neuropsychologist (EK). A "clock trophy" (Fig. 2) and detailed analysis of the submission is presented to the winner at the annual graduation banquet. Examples of winning clock entries and the years they were submitted are presented in Figure 1.

FIGURE ONE: SELECTED WINNING ENTRIES TO DRAW-A-CLOCK CONTEST

1991a **1991b**

A schizophrenic male tested during metabolic delirium (a) and after recovery (b).

Reason for selection: With his baseline regained the patient still shows stimulus bound behavior as reflected by the hand placement, consistent with his baseline frontal executive dysfunction.

2007*

72 year-old woman with severe recurrent depression, multiple prior ECT treatments, and atrial fibrillation. Her MMSE score was 30!

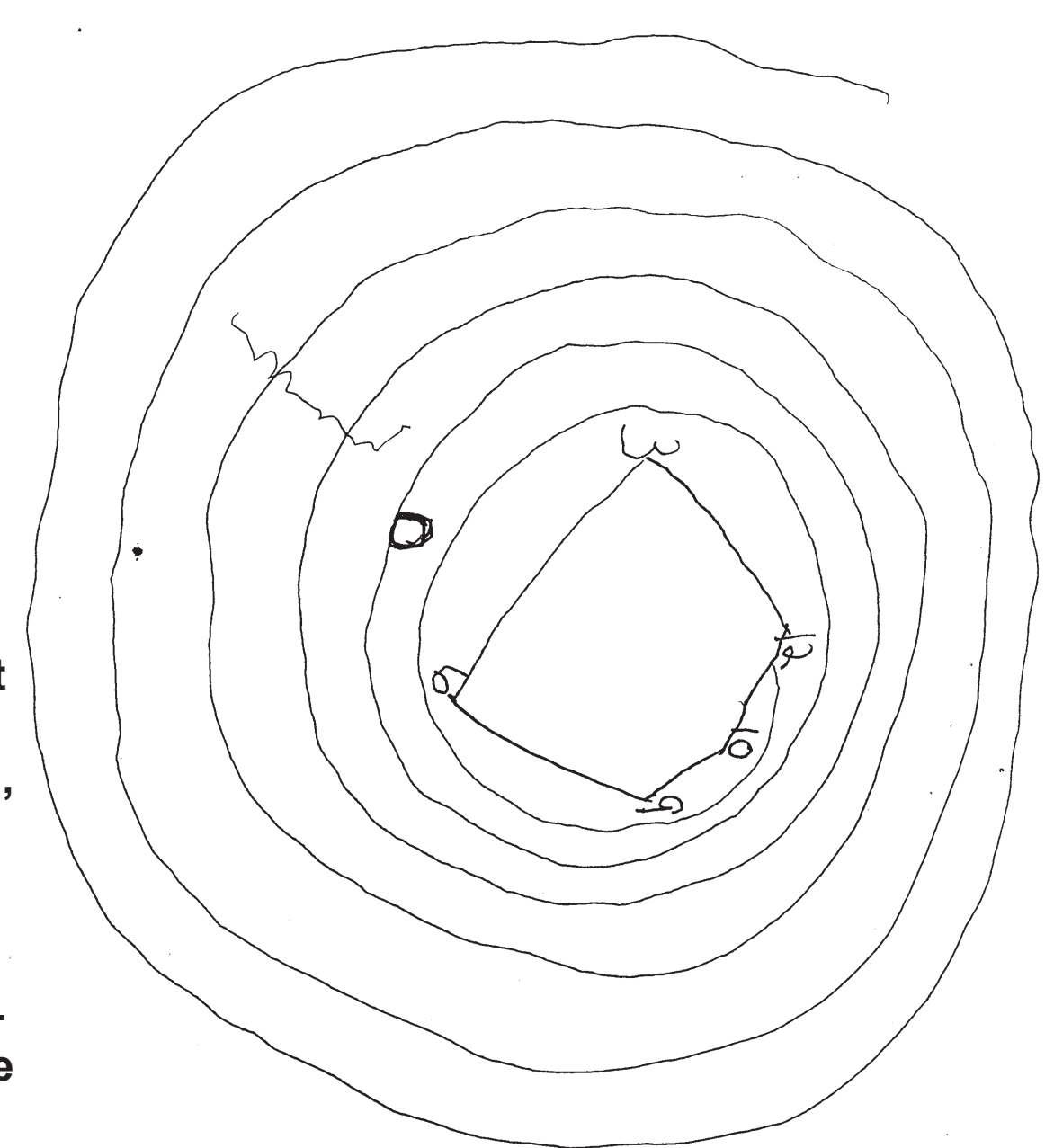
Reason for selection: A reminder to trainees that one can have significant cognitive deficits and still score 30 on the MMSE, which is no substitute for thorough cognitive status assessment.

* This clock was submitted by a senior faculty member. Though the draw-a-clock trophy is intended for residents only, this example was felt to teach such an important lesson that an exception was made and the faculty member was given a special award.

2001a

Schizoaffective female in 20's with memory & concentration problems before (a) and after (b) treatment with methylphenidate. Her group home reported, "We can't see any change in her memory or concentration, but her mood is GREAT!! She sings all the time."

Reason for selection: Clock indicates mood improvement at the expense of cognitive deterioration & increased perseveration, despite unchanged serial 3's & 3 object recall.



2001b

2004

55-year-old woman with schizophrenia presented to ED with sedation (suspected med toxicity). Clock drawn as part of ED exam. CT later showed right frontal metastases from unknown primary. Dr. Kaplan commented, "... the most dramatic example of stimulus bound behavior suggestive of right frontal pathology that I have ever seen."

Reason for Selection: superimposition of right frontal deficits on baseline frontal syndrome of schizophrenia.

1999

50 year-old left handed alcohol dependent male recovered from EtOH withdrawal, with a MMSE score of 23.

Reason for selection: Preserved perimeter and hands emanating from center indicate preservation of right posterior structures (i.e. against Alzheimer disease). Numbers written as automatized series & filling the square indicate field-dependence consistent with executive dysfunction. Finally he does appear to have registered the 10 after 11 command given his comment at lower right and his having self-corrected the 9 and added a 1 before the 10. In sum a dementing alcoholic with evidence of frontal dysfunction.

2004*

*Submitted too late for contest but was felt an excellent example of the clock task being used to follow effect of pharmacological treatment of Alzheimer disease.

2006A **2006B** **2006C**

2006D **2006E** **2006F** **2006G**

55 year-old nurse with chronic alcohol dependence sustained MI with anoxia, and developed Wernicke's encephalopathy and delirium tremens. A through F are daily clocks done days 1 through 6. G was drawn a few days later, approximately day 8.

Reason for selection: Progression of clocks dramatically illustrate the superimposition of delirium tremens on presumed anoxic damage, with increasing perseveration and automatized series. They make a graphic snapshot of progressive cognitive dysfunction.

1990

78 year-old woman with recent left parietal stroke.

Reason for selection: demonstrates numerous findings including preservation of the right hemisphere contribution to the task with numbers mostly in left hemifield and following a circular path; and the suggestion of hands at 11:10 in the second circle consistent with right frontal degradation seen in the elderly.

2008

85 year-old woman with right posterior cerebral artery stroke.

Reason for selection: Not only does this clock demonstrate the dense left hemianopia but the difference between the parietal and temporal quadrants indicate that there may have been either a prior left parietal stroke or pre-existing Alzheimer disease.

FIGURE TWO: DRAW-A-CLOCK AWARDS



The Draw-A-Clock trophy, created from a different vintage clock each year, is presented annually at the residency graduation banquet. Left: 2000 winners and trophy. Upper Right: 2006 trophy. Lower Right: 2008 contest winner with trophy.

Results: As a result of this contest, mental status examinations by trainees have become more comprehensive and an atmosphere of neuropsychiatric inquiry has been maintained. Faculty members have also incorporated this task into their mental status assessments, thus establishing a culture of cognitive inquiry and an academic tradition.

CONCLUSION: The Draw-A-Clock contest helped promote a change in the UMass Psychiatry Residency Program toward a culture of cognitive assessment and neuropsychiatric inquiry in an engaging fashion.

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