LETTER TO THE EDITOR

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Reply to: "Diagnostic test accuracy of the Montreal Cognitive Assessment in the detection of post-stroke cognitive impairment under different stages and cutoffs: a systematic review and meta-analysis"

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Dear Editor-in-Chief,

We read the review by Shi et al. [1] with interest and agree that early detection of post-stroke cognitive impairment (PSCI) is very important, both for clinicians and patients since accurate detection of cognitive deficits post-stroke can facilitate appropriate rehabilitation and discharge planning. The authors aimed to systematically review the literature to identify and quantify studies reporting the diagnostic accuracy of the Montreal Cognitive Assessment (MoCA) [2] in stroke survivors, assess the sensitivity and specificity of the MoCA, provide optimal cutoffs, and compare the MoCA with other available screening tools. These aims together with the suggestion at the start of the discussion that "a brief and sensitive screening tool is urgently needed," prompted us to highlight a significant oversight. The Oxford Cognitive Screen (OCS) [3] was specifically developed as a brief cognitive screen for use post-stroke and although the OCS was used in the study by Mancuso et al. cited in the review [4], the key study comparing the OCS with the MoCA in a sample of 200 acute stroke survivors [5] is not included. This is surprising given that the review inclusion criteria encompassed observational studies in stroke patients which assessed PSCI by the MoCA with a neuropsychological evaluation as the reference standard.

The OCS was specifically designed as a brief neuropsychological battery for the stroke population, with tasks which are inclusive for, and unconfounded by, aphasia and neglect. It provides a domain-specific cognitive profile post-stroke, summarizing performance across five cognitive domains (Fig. 1). The OCS has been translated and re-normed in seven other languages (see www.ocs-test.org, under translations). Its design is predicated on the recommendations by the National Institute for Health and Care Excellence (NICE), stating that acute cognitive assessment after stroke should include the assessment of attention, memory, spatial awareness, apraxia, and perception [6]. The OCS is also recommended in the Royal College of Physicians National Clinical Guideline for Stroke as a standardized screening tool [7].

While we agree with Shi et al.'s [1] conclusion that the MoCA and to a lesser extent the Mini-Mental State Exam (MMSE) [8] are useful brief screening tools for PSCI, neither of these assessment tools are stroke-specific. Both are unable to fully identify domain-specific cognitive deficits, which are highly prevalent in acute stroke [4, 5], though the MoCA is more sensitive than the MMSE to cognitive profile differences between clinic-pathologic groups [9]. In addition, the Addenbrooke's Cognitive Examination-Revised (ACE-R) [10] does not appear to add significantly to the information contained in the MoCA [11]. In a cross-sectional study of a consecutive sample of 200 patients within three weeks of stroke, Demeyere et al. [5] compared the MoCA with the OCS and found that overall the OCS was more sensitive in detecting impairments than the MoCA, with several people scoring in the normal range demonstrating stroke-specific deficits. The OCS detected impairments including neglect, apraxia, and reading/writing ability not identified by the MoCA that may be important in guiding rehabilitation, demonstrating the
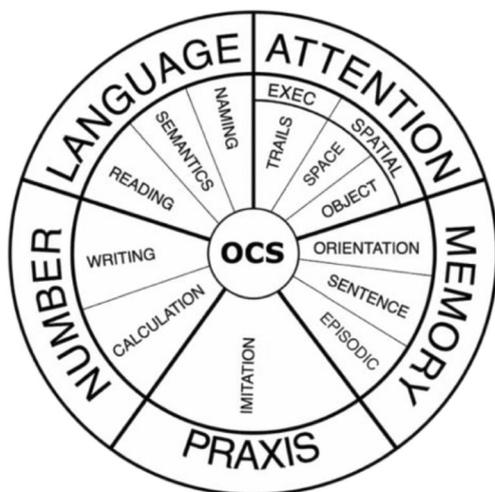
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Fig. 1 The Oxford Cognitive Screen (OCS) returns a visual snapshot of the patient's cognitive profile

value of cognitive profiling. In addition, patients who were unable to complete the MoCA or failed due to language deficits were able to demonstrate preserved cognitive domain functions outside the language domain.

We agree with the authors' statement that there is no consensus regarding the gold standard assessment for cognition after stroke; different tools will satisfy different requirements. For example, the MoCA, (or other short tests) may be appropriate in the assessment of patients with mild cerebrovascular events (TIA and minor non-disabling stroke) [11], or in the detection of longer-term post-stroke cognitive impairment when the number of survivors with severe stroke and problems interfering with the use of brief tests is small [12]. Short screening tests including the MoCA may also serve as an initial screening tool after acute stroke in pragmatic large-scale studies in predicting longer-term cognitive and functional outcome, or to guide need for further in-depth assessment [13, 14]. In contrast, the OCS is more appropriate for informing the management of patients with acute severe stroke who will require extensive rehabilitation. The OCS requires more resources than the MoCA or MMSE, including a brief video tutorial training and more extensive test materials, thus its use should be targeted appropriately. Therefore, cognitive screening tests should be selected according to the available resources, expertise of the assessor, the characteristics of the patients being assessed, and the desired cognitive information.

Compliance with ethical standards This "Letter to the Editor" has not been submitted to more than one journal for simultaneous consideration and the authors declare no conflict of interest.

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