Research Summary - Dr. Sam S. Webb -

Summary of Sam Webb's PhD Research at the University of Oxford

UNIVERSITY · OF · OXFORD

DOMI NVS
NVS TIO
ILLV MEA

Stroke association

TRANSLATIONAL
Neuropsychology Group

TABLE OF CONTENTS

TRANSLATIONAL
Neuropsychology Group

A WORD FROM SAM

Dr. Sam S. Webb
PhD
(Oct 2020- August 2024)

A PhD is a funded period of independent original research. My PhD was funded by a Fellowship from the Stroke Association.

I would like to start by expressing my my **sincere thanks** to all who have contributed to the success of my research.

I could not have done any of it without your willingness to take part and the **generous** amount of time you have given me.

Whether we first met at the OSRU in Abingdon, at your home for a follow up, or in the Department, I thank you.

Since November 2020, my PhD research was conducted with stroke survivors who kindly took part in my studies through the **Oxford Cognitive Screening Programme**. Many of you were first approached by our team at Oxfordshire Stroke Rehabilitation Unit (OSRU) at Abingdon. .
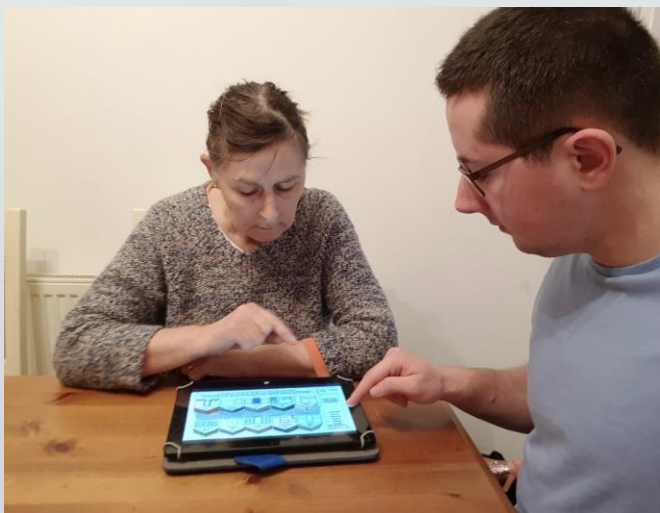
In addition to stroke survivors, many **'neurologically healthy controls'** also took part in my studies. These are people who have no neurological or severe psychiatric difficulties.

These individuals have helped to set the **benchmarks** for what we can expect people to perform like on our tests. When we have these standards, we can compare new stroke survivors to these benchmarks.

Thank you again to all who have informed my research, participated in my research, and contributed to furthering stroke research.

MY RESEARCH

Here, I explain a bit more about what my research projects were,

some of which you have taken part in!

Healthcare professionals, like Occupational Therapists and Psychologists, are concerned with how stroke survivors do in their **everyday life** once they are discharged, following their stroke.

These professionals cannot be with a stroke survivor all the time to observe them in all possible situations.

Instead, they run shorter **assessments** which can indicate **likely problems** in everyday life when the professional is not around.

I have helped **develop and test assessments** aimed to give healthcare professionals an indication on **future** everyday behaviour.

To do this, many **stroke survivors have completed these assessments with me** and we can then see how well the results can predict future outcomes, such as their future thinking skills and activity in daily life when I follow the same people up 6-months later.

I have presented my findings/research at many **international and national** conferences and gatherings.

Including talking to the general public.

KEY TESTS DEVELOPED

Below are some tasks that you may have taken part in or find familiar

I have helped in developing **several** tasks, many of which you may have taken part in!

The **Oxford Digital Multiple Errands Test (OxMET)** – a shopping task on a computer tablet that measures complex mental multitasking ability. It takes around 5 minutes to complete.
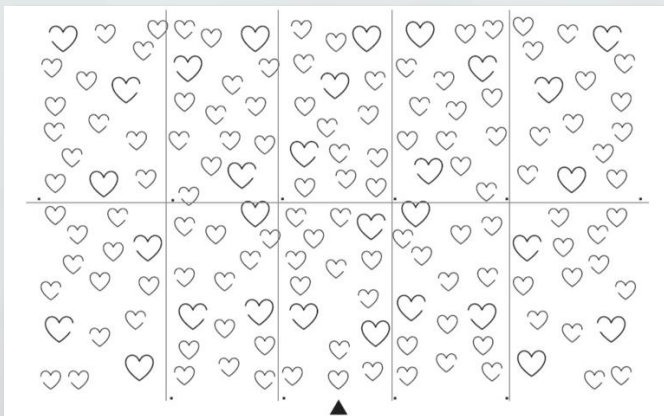
The **Oxford Cognitive Screen (OCS)** – a pen and paper assessment of different thinking abilities. This is normally administered by clinicians in hospitals in around 25 minutes.

The **Oxford Cognitive Screen – Plus (OCS-Plus):** a computer tablet version of the OCS that takes around 26 mins to complete. It has much harder tasks!
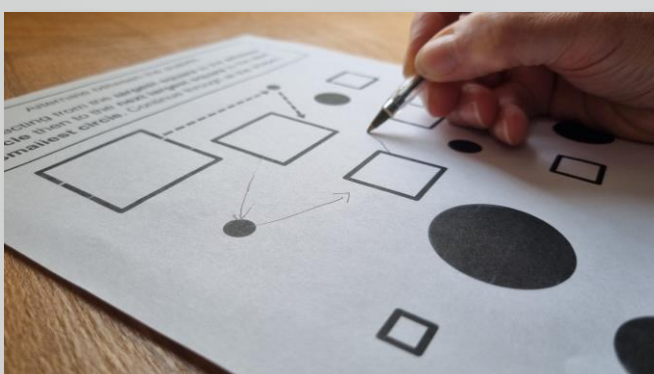
The **Mini-Oxford Cognitive Screen (Mini-OCS)**– another version of the OCS that is shorter and can be administered by GPs in a normal GP time slot.

OXMET RESEARCH

The OxMET is supposed to reflect how people do in **everyday life**, so we can use it to **predict** recovery and independence later following stroke.

In my first study, I compared how people perform on the OxMET in their **own home**, to a task involving completing **errands** around the home in different rooms.

This research evidences the idea that OxMET **actually** captures elements of real-life. If it does not relate to real outcomes, healthcare professionals can't use it in practice to understand how people will do in their everyday life.
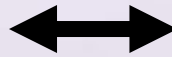
Findings: The OxMET **can** indicate whether someone will have difficulties in everyday errands, compared to observing them doing the errands. This is **useful** to healthcare professionals, as they can quickly run the 5-minute OxMET instead of setting up a big observation.

In my second study, I personally recruited **117** stroke survivors from OSRU and completed the OxMET with them. I then followed up **66** of them and they did the OxMET again, as well as several other tasks.
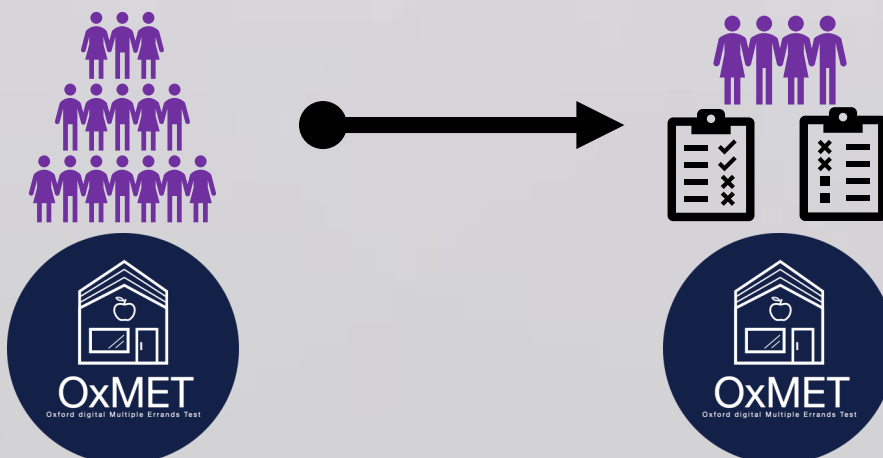

Findings: The OxMET is **great** at indicating future activities and abilities. The OxMET is **better** at this than commonly used assessment tools, so may well replace them. However, the OxMET is **not perfect** at this, and there are many **other things** that predict future outcomes as well.

OCS RESEARCH

The OCS is currently used by stroke healthcare professionals nationally and internationally to assess for difficulties in thinking skills.

The OCS is administered **face to face** on pen and paper. Due to the **COVID-19** pandemic the OCS could not be used in different stroke services. These services included out-patient clinics and community services like Early Supported Discharge at the JR.

I created a version of the OCS that can be done on **videocall or over the phone**. I compared **40** stroke survivors' performance on both versions.
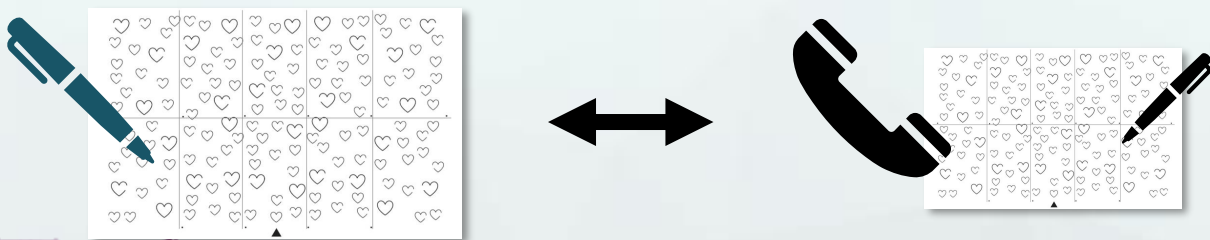
Findings: The Tele-OCS (remote version of the OCS) is **as good** at detecting difficulties in thinking abilities as the original face to face OCS. This means healthcare professionals can use the Tele-OCS in their practice and be confident it is a **valid** assessment tool.

In another study, I used data from **98** stroke survivors who had their stroke on average 4.5yrs previously. My team asked them to complete the Tele-OCS and a series of **many** other tests to compare how they do.

This study provided evidence that the Tele-OCS is **at least as good as** other tasks that can be done over the phone/video call.
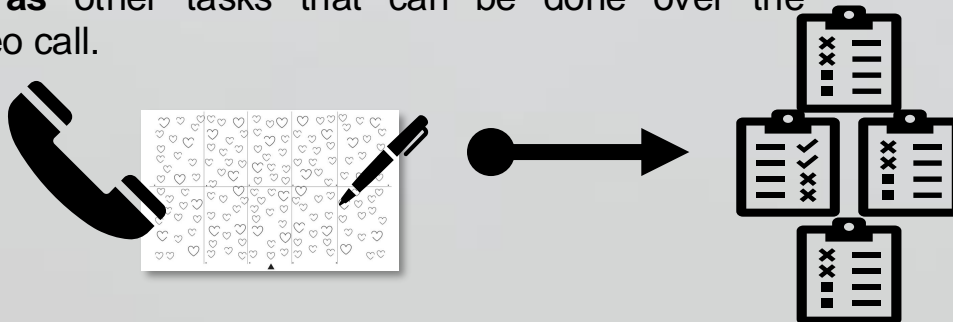
Findings: The Tele-OCS performs just as well as several other well-established tests. This means clinicians can be **confident** in using the Tele-OCS to assess stroke survivors who they otherwise can't see in person.

OCS-PLUS RESEARCH

The OCS-Plus is a harder version of the OCS, designed to detect subtle difficulties in thinking abilities often missed by other tests.

For my last main project, I investigated whether the OCS-Plus **does indeed detect more** subtle problems than other tests that are also very good at subtle problem detection.

Subtle difficulties are **often missed**, and stroke survivors are discharged home without the **proper care package** they need, or rehabilitation is not offered at all(!)

I compared the OCS-Plus to our own OCS, as well as many other highly regarded tests.
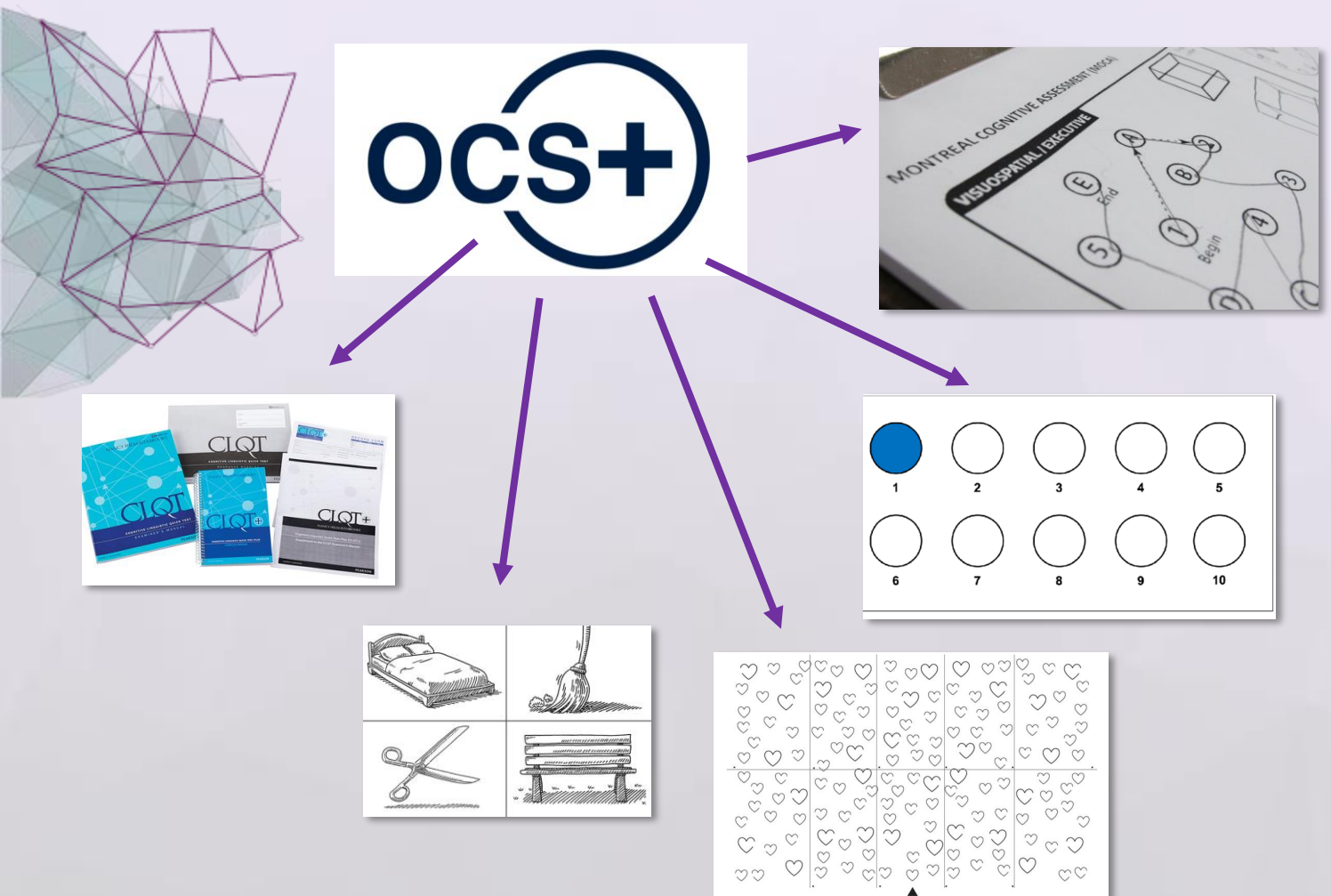
This project mainly took place in **OSRU**.

If you were one of the participants who helped me, by completing so many tests at your bedside, thank you so much!

Findings: The OCS-Plus performs as well, it not better, than other well-established tests at detecting subtle problems. This means, those who are often missed in the hospitals and written off as 'fine' with 'no cognitive problems' will be detected, and this will help the care and rehab they receive.

HOW YOU'VE HELPED ME AND OTHERS

Tests in real world UK clinical settings and internationally!

So far, the OCS-Plus and OxMET are being used in by over 900 healthcare professionals and researchers.
The OxMET has been translated into 2 languages/cultures, the OCS-Plus has been translated into German, Dutch and Kenyan, with other countries and languages under way.

Many published scientific articles!

Thanks to your support and participation in my research, I was able to publish **many** scientific articles in highly respected academic journal during my doctorate degree.

Scientific publications can be considered a **currency** needed to progress in University careers, so thank you for helping me set up well for the next stages of my work.

I Finished my doctorate degree!

It was a long ~4 years, but I did it. Internal and external (from the University) scientific experts reviewed my work presented for my doctorate. They viewed it so favorably I was able to pass my degree right away.

Other Achievements You Helped us with…

- I have presented my work at local and international conferences in London, Liverpool, Barcelona, Porto, Coimbra, and more!

- Oxford University submitted our work as one of 5 impact cases for the Research Excellence Framework assessment

- Research grant funding from the Stroke Association for the next stage of my work

FUTURE DIRECTIONS

What is next?

Due to your help in my research, I was awarded the next stage **Fellowship** award from the **Stroke Association: a postdoctoral fellowship**.

This time the award is for 3 years of research. I am developing on what I have already built and taking it that **step further**.

I hope to help more stroke survivors through development of **finer tuned** and more **accurate** tools. Crucially, tools need to be suitable for **all** stroke survivors and healthcare professionals too.
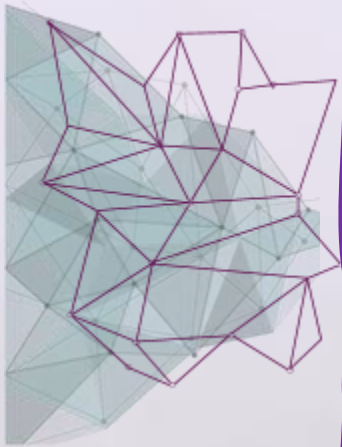
This is Professor Nele Demeyere, my supervisor.

Thanks goes out to her for her unwavering support and expert guidance.

THANK YOU ALL!

- Sam

REFERENCES & Resources

OxMET

Webb, S.S., Jespersen, A.,Chiu, E. G., Payne, F., Basting, R., Duta, M. D., & Demeyere, N. (2021) The Oxford digital multiple errands test (OxMET): Validation of a simplified computer tablet based multiple errands test, *Neuropsychological Rehabilitation*, DOI: 10.1080/09602011.2020.1862679

Webb, S. S., & Demeyere, N. (2024). Comparing the Oxford Digital Multiple Errands Test (OxMET) to a real-life version: convergence, feasibility, and acceptability. *Neuropsychological Rehabilitation*, DOI:10.1080/09602011.2024.2344326.

Webb, S. S., & Demeyere, N. (2023). Predictive validity of the Oxford Digital Multiple Errands Test (OxMET) for functional outcomes after stroke. *Neuropsychological Rehabilitation*, DOI:10.1080/09602011.2023.2247152

OCS

Webb, S. S, Carrick, C, Kusec, A, & Demeyere, N. (2023). Introducing the Tele-OCS: A validated remotely administered version of The Oxford Cognitive Screen [version 1; peer review: 1 accepted, 1 approved with reservations]. *Health Open Res 2023*, 5:8, DOI: 10.12688/healthopenres.13291.1

OCS-Plus

Demeyere, N., Haupt, M., **Webb, S.S**. et al. Introducing the tablet-based Oxford Cognitive Screen-Plus (OCS-Plus) as an assessment tool for subtle cognitive impairments. *Scientific Reports*, 11, 8000 (2021). DOI: 10.1038/s41598-021-87287-8

Webb S. S, Hobden G, Roberts R, Chiu EG, King S, Demeyere N. (2022) Validation of the UK English Oxford cognitive screen-plus in sub-acute and chronic stroke survivors. *European Stroke Journal*. DOI: 10.1177/23969873221119940

Roberts, R., Vohora, R., **Webb, S. S.,** & Demeyere, N. (2024). Validating the OCS-Plus against a clinical standard: A brief report. *Journal of Neuropsychology*. DOI:10.1111/jnp.12369

Other

 Webb, S.S.., Kontou, E., & Demeyere, N. (2021) The COVID-19 pandemic altered the modality, but not the frequency, of formal cognitive assessment, *Disability and Rehabilitation*, DOI: 10.1080/09638288.2021.1963855