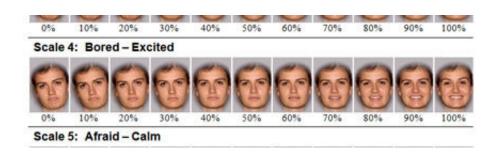# New facial expression app to monitor mood in stroke patients

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Credit: University of Nottingham

A new medical app that helps brain-damaged stroke patients communicate how they are feeling has been developed and tested by researchers at the University of Nottingham.

There are around 1.2 million stroke survivors in the UK and many of them have life-changing disabilities that can lead to severe depression or anxiety. It is important to monitor a patient's mood during treatment and recovery but around a third of patients have aphasia where the resulting brain damage makes it difficult for a stroke survivor to speak or understand written or spoken language.

The new app is called the Dynamic Visual Analogue Mood Scale (D-VAMS). It uses scales of morphing facial expression images to help people communicate how they are feeling without the use of language. The results of a validation study are published in the journal *Clinical*

*Rehabilitation*.

D-VAMS is an interactive web-based tool consisting of seven scales designed to reflect varying degrees of different emotional states. The smart technology uses photographic images of human faces, both male and female, that can be morphed into different expressions and intensities by moving a slider.

The scales were developed at the Division of Rehabilitation and Ageing in the School of Medicine at the University of Nottingham. Dr Paul Barrows developed and tested the scales for his PhD and describes them as a significant step forward for measuring mood in people with communication problems.

"It's hoped that this will help healthcare professionals to assess mood in stroke survivors more easily and more accurately. It will also mean that more studies of rehabilitation after stroke will be able to include people with aphasia. As it is, many studies simply exclude this group because of the difficulties involved in assessing their mood."

The D-VAMS scales can be used to measure degrees of emotion from 0–100% on seven dimensions of mood:

- Miserable – Satisfied
- Sad – Happy
- Distressed – Peaceful
- Bored – Excited
- Afraid – Calm
- Angry – Peaceful
- Sleepy – Alert

Because the scales are purely visual, D-VAMS may also be used by people across all languages and cultures. They may also prove useful for

use with infants or people with learning disabilities.

One of the participants who took part in the assessment of the new app commented: "The facial expression scales are pretty and fun to use." Others said they found it 'quite therapeutic' and 'easy enough to use'.

The system was tested by Dr Barrows in an observational study involving a group of 46 stroke survivors, 24% of whom had aphasia. The volunteers were recruited from stroke clubs, online and via an NHS rehabilitation service. The participants reported their mood by using the slider on a set of seven bipolar scales to choose a facial expression. They also reported their mood using an existing questionnaire-based measure called the Hospital Anxiety and Depression Scale (HADS), and the two systems were compared.

The study found that the D-VAMS scores were highly correlated with those of the HADS, and that the D-VAMS served as an accurate and reliable measure of mood in stroke patients. The individual scales also allowed for a wider range of emotions to be assessed. These findings suggest that the D-VAMS is suitable for assessing mood and screening for depression in stroke survivors who cannot use language-based mood measures due to aphasia.

**More information:** Paul D Barrows et al. Assessment of mood in aphasia following stroke: validation of the Dynamic Visual Analogue Mood Scales (D-VAMS), *Clinical Rehabilitation* (2017). DOI: 10.1177/0269215517714590

The tool is available as a free download for medical professionals, patients and carers: play.google.com/store/apps/det … d=com.phonegap.dvams

Provided by University of Nottingham

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