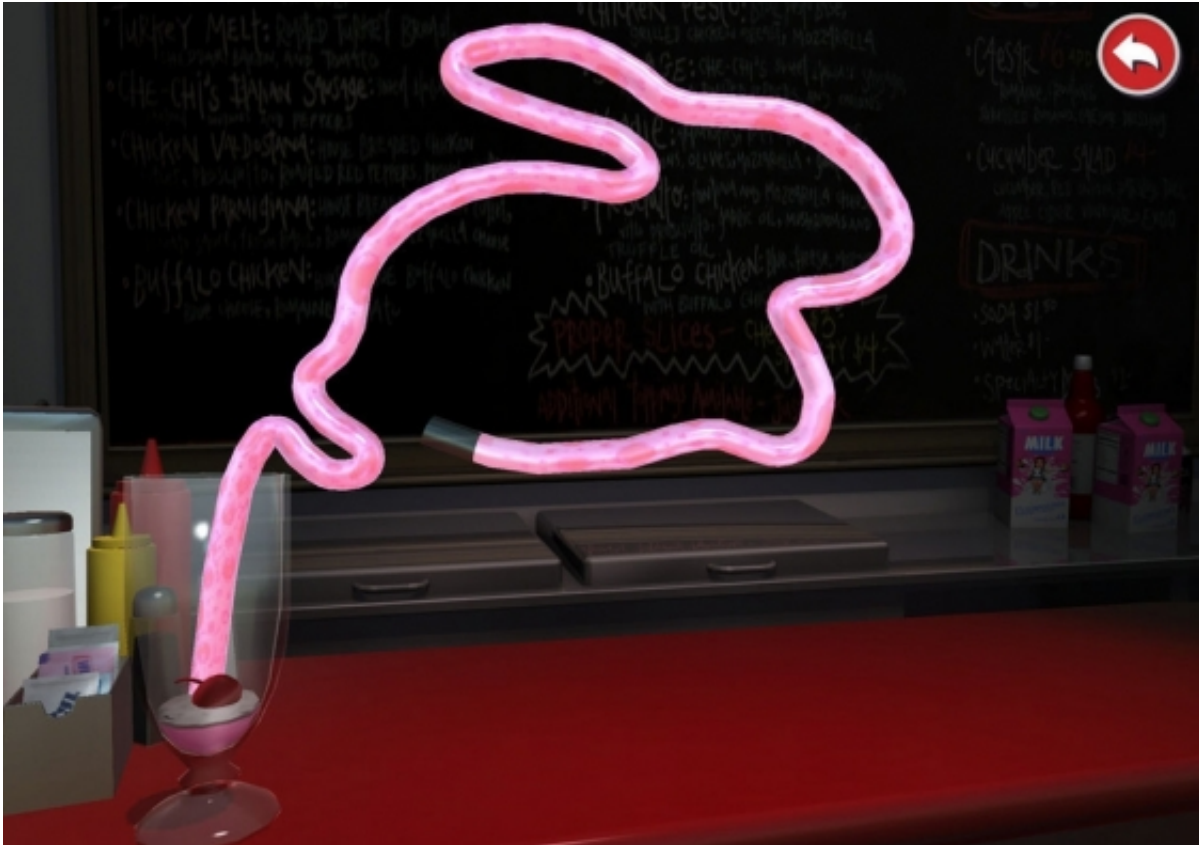


New app to assess eye-hand coordination

October 31 2016, by Deborah Smith



One of the colourful tasks on the L-R Eye-Hand Coordination App - tracing a rabbit-shaped straw. Credit: University of New South Wales

An app for testing eye-hand coordination that requires users to trace colourful shapes with a stylus pen in a fun, games-like manner has been developed by UNSW optometrists.

The iPad app, which costs \$2.99, automatically records the time taken to complete each shape and the number of tracing errors, providing a cheap, more objective testing option for optometrists and other health professionals than is currently available.

Good eye-hand coordination – using visual information to produce the desired fine hand movements – is important for many aspects of life, such as writing and positioning objects carefully. Testing is often carried out to detect developmental disorders in children, or after brain trauma in adults.

The new Lee-Ryan Eye-Hand Coordination App was conceived by Kiseok Robin Lee as part of his PhD research in the School of Optometry and Vision Science.

It was designed by Dr Malcolm Ryan from the School of Computing Science and Engineering at UNSW, with support from optometrists Dr Catherine Suttle, Associate Professor Barbara Junghans and Dr Sieu Khuu.

Traditional methods of testing eye-hand coordination, such as putting pegs in holes or threading beads, are repetitive and not very engaging. They also require subjective assessments by those conducting the tests. On the other hand, objective testing using cameras to monitor hand movements precisely is expensive.

"Our new UNSW app has the advantages that it is cost effective, provides precise measurements and is very portable. And both kids and adults say it is fun to use," says Associate Professor Junghans.

"Importantly, we also have preliminary evidence of poorer performance in people with amblyopia, or lazy eye, where the vision in one eye is reduced because the eye and the brain are not working together properly.

"Previously there has been no simple way to establish this visual deficit apart from the usual visual acuity loss in people with amblyopia," she says.

Compared with other testing methods, the app also has the benefit that it does not involve the use of gross arm movements and so focuses on coordination of the fine motor movements of the fingers and hand.

The app's repeatability and the mathematical degrees of difficulty for the various levels have been empirically verified in a study on adults and children published in the *Journal of Neuroscience Methods*.

The app also provides researchers with the option of downloading all temporo-spatial data.

The app may be used before or after interventional training. However, at this stage there is no evidence to support the use of the app as a training tool for eye-hand coordination.

To find the app, search the iTunes App Store using the term 'L-R eye hand coordination' and click on the milkshake icon to see a few of the screen shots – [or just click here](#).

The app is expected to be useful for optometrists, especially those working with children and in the areas of sports vision, rehabilitation and neuro-optometry, as well as for ophthalmologists, orthoptists, paediatricians, neurologists, psychologists, rehabilitation specialists and remedial educationalists.

The UNSW research team is investigating expected levels of performance on the app by different groups and the results will be integrated into the app itself in due course.

By purchasing the app health professionals can help fund this research and expedite its refinement so it becomes a standard clinical tool.

More detailed instructions and background are available from [the clinic website](#). Queries and feedback on the app and its use are invited. Please contact Associate Professor Junghans and Dr Khuu on ehc@unsw.edu.au

More information: Kiseok Lee et al. Development of a novel approach to the assessment of eye–hand coordination, *Journal of Neuroscience Methods* (2014). [DOI: 10.1016/j.jneumeth.2014.02.012](https://doi.org/10.1016/j.jneumeth.2014.02.012)

Provided by University of New South Wales

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