**Participant Information Sheet – for parents and guardians**

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| Project title: | Intelligent learning software for typically developing children using machine learning agents |
| User study: | COGNITION PUZZLES USER STUDY |
| Principal investigator: | Charaka Palansuriya, Aurora Constantin |
| Researcher collecting data: | Xingran Ruan |
| RT number: | 589435 |

This information sheet is for parents and guardians. It explains the research project at the University of Edinburgh, in which we would like your child to participate. It gives information about the project in the form of questions you might have and their answers. If you have further questions, we are happy to discuss them and give you more information.

This study was certified according to the Informatics Research Ethics Process, RT number 589435. Please take time to read the following information carefully. A shortened version of this information will be provided/read aloud to your child should you agree to their participation in the project. You should keep this page for your records.

**Who are the researchers?**

* **Xingran Ruan:** [**xruan@ed.ac.uk**](mailto:xruan@ed.ac.uk)
* **Charaka Palansuriya:** [**c.palansuriya@epcc.ed.ac.uk**](mailto:c.palansuriya@epcc.ed.ac.uk)
* **Aurora Constantin: Aurora.constantin@ed.ac.uk**

**What is the purpose of the study?**

We are exploring how AI/ML can help assess children's metacognitive monitoring performance based on their facial expressions, head pose and head rotation. Metacognition—often described as "thinking about one's thinking"—is essential for effective learning. In particular, imprecise metacognitive monitoring performance can negatively impact learning outcomes. Our goal is to identify instances of imprecise metacognitive monitoring and develop ways to support children in enhancing their metacognitive skills, ultimately improving their learning outcomes.

**How can my child help?**

We hope to capture your child's facial expressions and body movements while they play with an app we developed. It's important for your child to be relaxed and focused during this time.

**Does my child have to take part?**

No – participation in this study is entirely up to you and your child. You can withdraw your child from the study at any time, without giving a reason. Your child may also withdraw at any time by saying that s/he does not want to take part anymore. Your rights will not be affected. If you wish to withdraw, contact the PI. We will stop using your child’s data in any publications or presentations submitted after you have withdrawn consent. However, we will keep copies of your and your child’s original consent, and of your withdrawal request.

**What will happen if my child takes part?**

If you and your children choose to join this research, we will invite your children to one quiet room/bring device to your place, to play with our application. During the study, you and your children can quit the research at any time if you feel uncomfortable without giving us any explanation.

When your child opens our application, the webcam will start to record. He/She will be guided to take part in six different cognitive tests. Each test is focused on one or more cognitive skills (inhibitory control, visual and spatial working memory, and target switching). Completing all tests would take 40 mins. You and your children can leave to relax at any time.

The webcam will record your children’s facial emotions and body behaviours. The application will record your child’s answer to each question. We promise that only project researchers can access the records/answers and all the records/ answers will be stored safely. We will follow the rules in the section below ‘**Data protection and confidentiality**’ in **child participant sheet**. If you have any further concerns, please feel free to ask Xingran Ruan ([xruan@ed.ac.uk](mailto:xruan@ed.ac.uk)).

**Compensation**

No

**Are there any risks associated with taking part?**

There are no significant risks associated with participation.

**Are there any benefits associated with taking part?**

No

**What will happen to the results of this study?**

The results of this study may be summarised in published articles, reports and presentations: we will remove any information that could, in our assessment, allow anyone to identify your child. With your consent, information can also be used for future research. Your child’s data will be archived for a maximum of 1 week.

**How will personal information be protected?**

Your child’s data will be processed in accordance with Data Protection Law. All information collected about your child will be kept strictly confidential. Your child’s data will be referred to by a unique participant number rather than by name. Your child’s data will only be viewed by the researcher/research team [Xingran Ruan, Charaka Palansuriya, Aurora Constantin].

All electronic data will be stored on a password-protected encrypted computer, on the School of Informatics’ secure file servers, or on the University’s secure encrypted cloud storage services (DataShare, ownCloud, or Sharepoint) and all paper records will be stored in a locked filing cabinet in the PI’s office. Your and your child’s consent information will be kept separately from your / your child’s responses in order to minimise risk.

**What are my and my child’s data protection rights?**

The University of Edinburgh is a Data Controller for the information you and your child provide. You have the right to access information held about your child. Your right of access can be exercised in accordance Data Protection Law. You also have other rights including rights of correction, erasure and objection. For more details, including the right to lodge a complaint with the Information Commissioner’s Office, please visit [www.ico.org.uk](http://www.ico.org.uk). Questions, comments and requests about your personal data can also be sent to the University Data Protection Officer at [dpo@ed.ac.uk](mailto:dpo@ed.ac.uk).

**Who can I contact?**

If you have any further questions about the study, please contact the lead researcher

Xingran Ruan ([xruan@ed.ac.uk](mailto:xruan@ed.ac.uk)). If you wish to make a complaint about the study, please contact

[inf-ethics@inf.ed.ac.uk](mailto:inf-ethics@inf.ed.ac.uk). When you contact us, please provide the study title and detail the nature of your complaint.

**Updated information.**

If the research project changes in any way, an updated Participant Information Sheet will be made available on <http://web.inf.ed.ac.uk/infweb/research/study-updates>.

**Alternative formats.**

To request this document in an alternative format, such as large print or on coloured paper, please contact Xingran Ruan ([xruan@ed.ac.uk](mailto:xruan@ed.ac.uk)).

**General information.**

Once again, **this study is completely voluntary and you and your child are under no obligation to take part.** Even if you say yes now, you may withdraw your child from the study at any time and for any reason by contacting us. Your child may also withdraw at any time by say that s/he does not want to take part anymore.

For general information about how we use your child’s data, go to: edin.ac/privacy-research

**Thank you for taking the time to read this.**