Designing Vignettes for fNIRs Studies to Analyze Adults' Empathy for Children in Technology: An Ethical Perspective

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In this paper, we summarize an ongoing research on designing a participatory study to analyze adults' empathy for children interacting with AI and technology using fNIRS. We raise awareness to the relevant ethical issues such as gender diversity, inclusiveness, removing biases and stereotypes while designing study approaches for children. We also delineate our reasons for willing to participate in the workshop, our potential contributions to it, and lastly, we talk about our expectations from the workshop.

CCS Concepts: • **Human-centered computing** → *HCI design and evaluation methods*.

Additional Key Words and Phrases: fNIRS, Vignettes, Empathy for Children

1 INTRODUCTION

With the recent development of science and technology, children are getting more exposed to artificial intelligence. If their interaction with AI is not monitored, that may lead to severe consequences. For instance, uncontrolled interaction with AI can adversely affect their mental growth and behavioral development [1]. On the other hand, if these interactions are monitored and influenced in a positive way, it can flourish their way of learning, creativity, and brain development [2].

In our research study, we are using functional near-infrared spectroscopy (fNIRS) to monitor the brain activities of adults while they are presented with different short scenarios or vignettes involving child interaction with AI. The scenarios can be categorized into two groups: 'concerning', and 'benign'. In both of the cases, the given situation is the same except for in the concerning cases, the scenario contained the ethically fraught version. For example, One scene depicts a 6-year-old child watching videos on an iPad when a commercial arrives on the screen. In the benign version of the story, the commercial is for a film with a G rating, and in the concerning version, every part of the plot is similar, with the exception of the advertisement displayed for an R-rated picture. We ensured that the vignettes equally represent girls and boys, maintained grammatical consistency in the third person perspective, and avoided age and gender stereotypes. With the help of the emerging brain sensing technique, fNIRS, we want to analyze the distinctive brain activation pattern while the participants are interacting with these scenarios and try to focus on understanding their empathy towards children.

2 WHY WE WANT TO PARTICIPATE

An active participation in the workshop can give the researchers opportunity to learn more about the ethical issues in designing specific studies which involve Child-Computer Interaction (CCI). Currently in our study, we are working on using the fNIRS to understand the empathy of the adults towards children in different AI and cybersecurity based scenarios. For this reason, we are developing participatory design approaches focusing on children, which can help people to be more considerate and empathetic towards them. Hence, participation in this workshop will be beneficial to understand and discuss the ethical issues to conduct such studies. This workshop will allow other researchers of different communities of the world to better understand the issues for designing participatory approaches for children. Furthermore, we plan to extend our study by including underrepresented communities in the fNIRS research, for example, muslim women and girls who wear head coverings; thus get excluded from the study for their religious regulations. And also, we want to work with visually impaired participants and plan to design a study which includes children. We can learn from the experiences of other people, which will enlighten us, broadening our scope of knowledge in the field of designing participatory processes and methods.

3 WHAT WE CAN CONTRIBUTE

In our research study, we designed and developed a collection of scenarios, or vignettes that involve the interaction of children with AI. For this reason, we conducted interviews with multiple educators, and collaborated with expert people in the field of cybersecurity, AI ethics, and child psychology. Collaborating as a team and considering the issues while designing the vignettes, we came to learn about many different aspects of creating and improvising the design approaches to the ethics of emerging technologies for children. In this workshop, we can share our knowledge and experience on how to deal with the ethical issues while designing any study that involves interaction of children with AI. For instance, how to mitigate subjective biases, how to fine tune attributes such as gender, age, and tone, how to differentiate between 'concerning' and 'benign' scenarios while designing the vignettes. This can open up new research ideas and aspects for people of different research communities. Moreover, we plan to talk about our experiences while collaborating with people from different backgrounds focusing on child development.

4 WHAT WE WANT TO GET OUT OF THE WORKSHOP

Attending the workshop and getting engaged in the discussion can help us find new ideas and ways to include in our research. Also, we want to discuss our work and ideas with other researchers, and their comments and constructive feedback can help us revise and improve our study. We also want to know about their thinking approach while designing a research study that involves the participation of children. Finally, in a broader aspect, we look forward to building strong connections with the researchers from different parts of the world.

5 CONCLUSION

We believe participating in this workshop can help us enlighten our knowledge in building participatory approaches considering the ethics of emerging technologies for children. Moreover, this can help us build a community focusing on this particular topic which will facilitate our research in future. Most importantly, knowledge and insights gained from this workshop will give us the opportunity to contribute more in the field of research involving children and AI technologies.

REFERENCES

[1] Elena Bozzola, Giulia Spina, Rino Agostiniani, Sarah Barni, Rocco Russo, Elena Scarpato, Antonio Di Mauro, Antonella Vita Di Stefano, Cinthia Caruso, Giovanni Corsello, and Annamaria Staiano. 2022. The Use of Social Media in Children and Adolescents: Scoping Review on the Potential Risks. *International Journal of Environmental Research and Public Health* 19, 16 (Aug. 2022), 9960. https://doi.org/10.3390/ijerph19169960

[2] Rebecca Marrone, Victoria Taddeo, and Gillian Hill. 2022. Creativity and Artificial Intelligence—A Student Perspective. *Journal of Intelligence* 10, 3 (Sept. 2022), 65. https://doi.org/10.3390/jintelligence10030065