From Ideas to Impact: Cracking the Code for Effectively Engaging Teens in Long-Term Online Safety Research

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ABSTRACT

We solicited feedback from seven teens (aged 15-17) after they served for approximately two years on a Youth Advisory Board (YAB) for online safety. During this program, we engaged with them in various activities, including reviewing our lab's research protocols and co-designing online safety solutions, while teaching them User Experience (UX) design skills. We found out that while teens valued the opportunity to enhance their design and research skills to strengthen their career profiles, they faced challenges regarding long-term commitment issues due to busier schedules, building long-lasting peer-to-peer bonds, and limited interactivity in research tasks. Based on these insights, teens suggested several improvements, which included stricter participation rules with increased accountability, more collaboration opportunities, and leveraging visual elements to increase interactivity with content. Our study emphasizes the importance of teens' experiences and perspectives in developing future programs for their effective involvement in online safety research.

CCS CONCEPTS

• **Human-centered computing → Empirical studies in HCI**.

KEYWORDS

Adolescent Online Safety, Asynchronous Research Community, Social Media

ACM Reference Format:
Naima Samreen Ali, Teulebit Ahn, Zainab Agha, Jinkyung Park, and Pamela J. Wisniewski. 2024. From Ideas to Impact: Cracking the Code for Effectively Engaging Teens in Long-Term Online Safety Research. In *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI EA '24), May 11–16, 2024, Honolulu, HI, USA.* ACM, New York, NY, USA, 7 pages. https://doi.org/10.1145/3613905.3650765

CHI EA '24, May 11–16, 2024, Honolulu, HI, USA

ACM ISBN 979-8-4007-0331-7/24/05
https://doi.org/10.1145/3613905.3650765

1 INTRODUCTION

Digital interactions have been a fundamental aspect of teenage life [21] which has made them vulnerable to various online risks including, cyberbullying, inappropriate content, and sexual risk [5, 6, 16, 18, 20]. Exposure to such risks can significantly impact the mental health of teens, leading to anxiety and depression [17]. To address these concerns, several co-design efforts [2, 3, 7] have been made in the HCI community, with recent trends toward involving teens in intergenerational programs [11, 13, 22] as co-researchers and co-designers in the development and evaluation of online safety solutions. For instance, Chatlani et al. [11] explored the idea of establishing an intergenerational participatory program using the lens of a justice-centered design (JCD) approach, focusing on mitigating systemic injustices that result from deprioritizing the specific developmental needs and desires of teens in online safety solutions. Moreover, many action research initiatives have suggested nurturing long-term partnerships with youth, to ensure their beneficence and continued generation and refinement of new ideas [8, 10, 11].

Yet, there have been challenges such as power imbalances between teens and researchers due to perceived knowledge gaps [19] and authority dynamics [13]. Studies also show that teens often felt unequipped, lacking the skills to act as equal partners [13]. To overcome these challenges, researchers have suggested leveraging the research apprenticeship approach for balancing dependence and autonomy when co-designing [11]. Based on the prior work, we engaged seven teens (aged 15-17) for over a year, in a Youth Advisory Board (YAB) program, to engage them in teens' online safety research by 1) getting feedback on lab research protocols and participating in research studies, and 2) teaching them UX design skills and industry-standard tools to lead their own UX projects on online safety. As exploring different strategies is crucial to maximize teens' involvement in online safety research, it is equally imperative to evaluate these strategies and gauge their effectiveness in facilitating teens' contributions.

Therefore, to assess the benefits and areas of improvement of the YAB program, we conducted detailed feedback sessions with each YAB member to examine how YAB sessions can impact teenagers, as well as how these can be improved and be more beneficial to them through iterative design processes and analysis. Therefore, we pose the following questions:

- **RQ1:** *What motivated teens to join the YAB, and what were their positive experiences from the program?*
- **RQ2:** *What aspects of the YAB did teens feel needed improvement? What suggestions for improvements did they offer?*

To answer these research questions, we carried out a qualitative analysis of the feedback sessions from seven teens, conducted via Zoom. For RQ1, we found that teens were able to exceed their understanding of online safety concepts, learn new design and research skills, and enjoy the flexibility of engaging in an asynchronous environment, which helped them achieve their goals of boosting their college profiles and contributing to the online safety research. For RQ2, teens shared concerns regarding the difficulty in keeping momentum in the long-term commitment, differing needs of teens, and limited interactivity in program activities that led to a lack of peer-to-peer connection building. They suggested different improvements including stricter rules for participation, providing need-based support, and fostering collaborative activities. For long-term engagement, they also recommended providing real-time and post-program completion updates on the impact of their contributions. In this study, we make the following contributions:

- Understand teens' motivations and challenges with participating in a long-term youth advisory board for contributing to online safety research.
- Recommend actionable ways for future researchers to effectively engage teens in long-term online safety research.

The insights from our study contribute to the CHI community by providing guidelines and practical applications that will aid in designing effective longitudinal programs facilitating enhanced engagement with teens and maximizing their contributions to online safety research.

2 METHODS

In this section, we provide an overview of the YAB program along with summarizing the feedback sessions we conducted upon the completion of the program.

2.1 Study Overview

The YAB program engaged seven teens (aged 15–17) for over a year in different stages of teens' online safety research. We conducted 18 sessions via Zoom to garner a wide range of perspectives regarding various online safety research topics and design interventions by directly involving them in shaping our research protocols as well as leading their own co-design online safety projects. We held 1) monthly study sessions to get feedback on research protocols and allow them to participate in research studies, and 2) bi-monthly workshop sessions to teach about various UX design concepts (e.g. storyboarding, user personas, etc.) and hi-fidelity prototyping tools (e.g. Figma) which they utilized in their online safety UX projects (see fig. 1). Each meeting lasted 2-3 hours comprising hands-on design activities and take-home assignments. For coordination between the team and research-oriented discussions, we involved YAB members in the Asynchronous Research Community (ARC) using Discord [9]. The YAB program concluded with a presentation day where teens showcased their UX projects on online safety and were commended for their contributions. Finally, to evaluate the working of the program, we conducted individual feedback sessions with the YAB members to get their in-depth insights about the different activities of YAB.

All the participants were from the United States and studying in high school when they joined the program. We had a balanced gender representation with 4 male and 3 female members. We recruited teens through an outreach campaign targeted toward youth-serving organizations and high schools. After passing the eligibility requirements, we acquired parental consent and teen assent. Each teen received a certificate of participation and a gift card of up to $450 as compensation for their time and contributions. To ensure ethical standards, we received Institutional Review Board (IRB) approval from the last author's institution. All team members had to complete IRB CITI training and the Protection of Minors (POM) training. We anonymized the data by removing identifiable information and paraphrasing the quotations to ensure confidentiality.

2.2 Feedback Sessions

We developed a semi-structured interview [1] protocol as it allowed for flexibility to explore new ideas based on the responses of the participants, along with some predetermined questions for key topics to cover. Our protocol contained some questions and potential follow-up questions related to the various aspects of the YAB. We organized these questions into three main categories:

(1) **Reflective Feedback on YAB**: We inquired about their overall experiences with the YAB including, but not limited to, their goals when they joined YAB, the Discord channel for asynchronous communication, and things they enjoyed the most along with the things we needed to improve.
(2) **Feedback on Research Protocols and Studies:** We also asked about their thoughts on reviewing study protocols, things they learned, and things they wanted to change.
(3) **Feedback on Co-Design Activities**: This included questions related to the co-design activities, their experience with leading their own UX projects, and any challenges they faced during these activities.

Each feedback session was approximately one hour long and conducted virtually via Zoom. We created an open environment where teens freely expressed their views and experiences of YAB. The sessions began with an overview of all the activities we carried out with them throughout the YAB and an emphasis on the value of participant's honest opinions. Then, we asked questions following our interview protocol but not in an organized manner as our follow-up questions were driven by the responses of the YAB members, allowing for a richer and deeper discussion. Toward the end, we encouraged participants to share any final thoughts and suggestions for future YAB sessions. We also asked them if they would be interested in participating in future online safety research. Finally, we thanked the YAB members for their invaluable contributions.

2.3 Qualitative Analysis Approach

To answer our RQs, we utilized the qualitative thematic analysis approach by Braun and Clarke [12], to identify themes related to the feedback on the YAB program. First, we transcribed the feedback sessions using Otter, an online tool to automatically transcribe Zoom audio/video recordings. After that, we familiarized ourselves

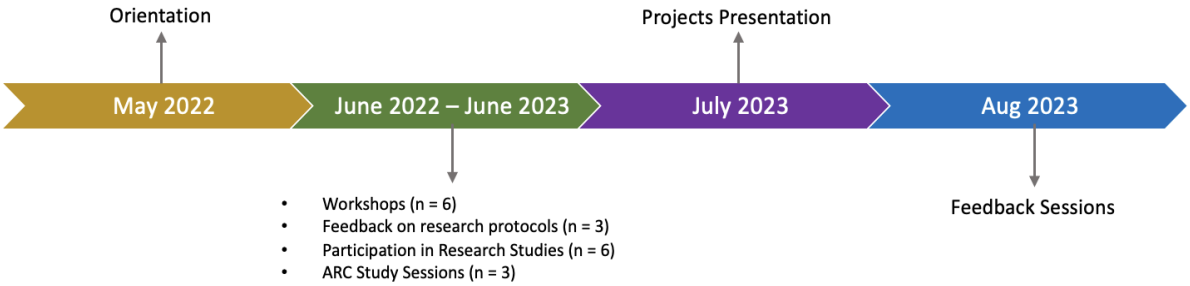

Figure 1: YAB Synchronous Sessions Timeline

with the data to generate initial codes. Then, open coding was done iteratively by two coders. The two coders convened frequently to discuss, refine, and finalize the codes. After the coding was complete, we conceptually grouped related codes into broader themes. These themes included key aspects of participant's experiences and perceptions of the YAB.

The emerging themes were similar across the research activities, so we chose to present them holistically. For RQ1, we found two main themes regarding teens' motivation for joining YAB: 1) to build their career profiles for long-term benefits, and 2) to contribute to online safety research. Also, we examined their positive experiences with YAB which included long-term engagement for deeper contributions, skills enhancement, exchanging diverse opinions, collaborative activities, and flexibility of ARC for better engagement. For RQ2, we analyzed the concerns and improvements shared by teens including lost momentum over time, hurdles in their long-term commitment, balancing design and research-based activities, lack of peer-to-peer interaction, the impact of their contributions, and making research more interactive and engaging. Below we report our findings along with direct quotes from the participants to support our themes.

3 RESULTS

In this section, we summarize the themes that emerged during the qualitative analysis.

3.1 Motivations and Positive Outcomes of YAB (RQ1)

While discussing their motivations for joining YAB, teens shared that they mainly joined YAB to ***build their career profiles for long-term benefits*** by learning new skills, enhancing their knowledge of key concepts of research, and building connections. They also wanted to explore different aspects of design and its applications. Teens believed that the skills they would acquire from the program held the potential to assist them long-term with future educational and professional endeavors. Consequently, they shared that this research experience would help boost their college profiles. They were also looking to develop connections with people in this area before going off to college for future collaborations. Along with personal growth and learning, teens were excited about ***contributing to online safety research*** by sharing insights:

> *" I think I just saw it as like, improving, like aiding researchers for safety issues and everything. So coming into this, I honestly wanted to be part of a research study." - T6 (15-year-old, Female)*

With their motivations in mind, teens shared positive experiences with YAB that helped them achieve their goals. Specifically, YAB helped directly meet teens' motivations by developing their interest and ***enhancing their UX research and design skills*** which provided the foundational basics to further explore the field. It also helped them brush up their communication skills as they consistently interacted with the researchers and other team members. The design activities equipped them with the skills to present and visualize their ideas. Additionally, teens expressed that the program allowed them to ***exchange diverse perspectives***. It helped them think deeply about online safety concepts and learn the different opinions of people in certain situations. They also liked the ***collaborative activities*** in which they had to build off of each other's ideas to complete a task as it helped foster a sense of community and nurtured team-building skills. T4 explained:

> *"I liked designing just because it gave me freedom to do what I want and create things that other people may not have thought of. But also get to see what other people are thinking and see the kinds of ideas that they have" -T7 (17-year-old, Female)*

Teens appreciated the ***long-term engagement*** that led to deeper and more meaningful contributions. They explained that it helped in the continuous formation of more intellectual and well-thought-out ideas and responses. Teens shared that engaging for a longer period cultivated a better rapport with researchers, assisting them in comfortably communicating their ideas and concerns. Moreover, having research activities spread out over the year made it easier for teens to manage them along with their other commitments. Relatedly, teens appreciated the ***flexibility of the ARC environment*** as they could carry out the activities at their own pace and engage with others at a time of their discretion. Overall, YAB improved their understanding of online safety concepts owing to the frequent discussions on various related topics throughout the YAB sessions. It made them better digital citizens as frequently talking about these concepts led them to internalize these ideas, which eventually became a part of their lives guiding them to be cautious in their online interactions:

> *"I think it just made me more acutely aware, being part of the research made me more aware and made me pay more attention to the kinds of potential safety breaches that you might encounter on social media, how I should behave when using the platform" - T4 (17-year-old, Male)*

Overall, the teens wanted to build their skills and enhance their profile for long-term goals (e.g., college applications). They commended the YAB activities in achieving their goals which helped them in understanding the online safety concepts better and increased their knowledge regarding research and design. They were able to freely voice their opinions while also learning from others' perspectives. They enjoyed interacting with peers through collaborative activities and leveraged the flexibility of ARC for managing the research and design tasks.

3.2 Challenges and Suggestions for Improvement (RQ2)

While YAB aimed to engage young teens in meaningful activities and discussions, there were instances where it did not align with the participants' expectations and overall efficiency of the program. Teens' feedback indicated key areas of concern, with suggestions for improved YAB experiences. Interestingly, teens' preferences and expectations varied in some areas. For instance, while teens appreciated the longitudinal nature of the program for richer contributions, some of them pointed out the challenge of ***losing momentum over time***. They shared their concern regarding the cancellation of meetings due to low attendance which made the meetings sparse leading to gaps in achieving the end goals of the program. Teens acknowledged that it was difficult to schedule meetings owing to the varying teens' schedules. However, they also mentioned that engaging in long-term research requires persistence and irregular meetings affected their ***long-term commitment*** in the program. Therefore, teens suggested having a fixed meeting schedule communicated at the beginning of the program. They also recommended having stricter participation rules for mandatory attendance and timely task completion, such as a negative impact on compensation for uninformed absence:

> *"I think you guys implemented this late where like, if you don't attend meetings, you don't get paid. Maybe you should have done that from the start. So it would motivate people to actually go to meetings or like, prioritize. I feel like that should have been done." T6 - (15-year-old, Female)*

Moreover, teens wanted us to acknowledge individual preferences and ***balance design activities with research-based thought work*** as their interests often diverged. Some liked the design activities more while others were more interested in study reviews as they loved critiquing and giving input on research protocols to generate new knowledge. Some teens also suggested having smaller groups working individually based on common interests and then having a larger meeting to share their work. At times, these differing preferences were tied to varying needs for support based on teens' level of technical expertise. Some teens needed more proactive guidance and mentorship in navigating the design tasks. To provide more support with design tasks, teens suggested having individualized support to those in need, such as frequent tutorials on Figma and hands-on project help. Whereas other teens found the design tasks to be tedious and time-consuming due to a lack of interest, as they wanted to be involved in "thought work" related to research goals:

> *"But to an extent I feel like learning how to use figma took up more of our time than it should have…I would have preferred using that time less on this on learning how to use figma and more on the the I guess technical aspects like the studies and like thinking about certain questions" - T2 (16-year-old, Male)*

Teens also expressed a desire for ***increased opportunities for peer-to-peer collaboration and rapport*** among themselves. Although teens developed a trusted connection with the researchers, they felt a lack of strong peer-to-peer bonds because of limited collaborative and team-oriented tasks. Similarly, while teens enjoyed the flexibility and freedom offered by ARC, they thought that it led to a lack of peer-to-peer interaction as it felt more like submitting responses to the researchers without much interaction among teens due to varying timings of responses. Moreover, one of the teens shared that its volatile nature can result in a lack of accountability, potentially compromising the quality of work:

> *"It can lead to a lack of accountability with the research of either doing it sort of haphazardly or last second, because you sort of forgot about it. These are, you know, errors that you need to plan for, if you're going to let people do it on their own." - T4 (17-year-old, Male)*

To this end, they urged for more group activities and having teens work in groups on the online safety UX projects to promote collaboration between members. They also suggested employing a combination of online and in-person meetings as face-to-face interaction fosters a deeper connection. We saw that teens proposed mandating interaction by requiring teens to respond to at least one other teen, with penalties for non-compliance. Teens also recommended recruiting more team members for a wider range of opinions that would promote deeper discussions. They further explained that having more members interacting with each other can inspire and motivate shy teens to take part in the discussions One teen recommended that as the research is about the online safety of teens, we should explore teens-driven problem solving where teens bring out different problems and other people (i.e. other teens and researchers) work together to design solutions for the problems:

> *"Make a kind of turn around once and be like, we give out different problems and have like different people design solutions for those." - T5 (17-year-old, Female)*

Teens also shared some insights on the necessity of ***learning about the contributions of their participation*** to keep them engaged and enhance the quality of their work. The main point they raised was that they were confused about the direct impact of all the work they did throughout the YAB. They wanted to team to report back the research outcomes to see how their contributions made a difference to the online safety of teens. To mitigate these concerns, teens suggested developing an alumni mailing list or newsletter following the program's completion, keeping them informed regarding the impact of their contributions. Similarly, teens

wanted to see the implementation of their design ideas on social media platforms and suggested inviting developers from the industry to assess their ideas as they are the ones who are responsible for modifications in the systems.

> *"These are the people that ultimately determine what you see and what you don't...So having the, the voices be heard by the people that actually dominate the UX engineering space, I think is absolutely important." - T4 (17-year-old, Male)*

Moreover, teens also suggested some improvements for the structure of reviewing research studies to ***make research content digestible and interactive***. They felt the need for more discussion sessions after providing feedback on the research protocols to discuss their concerns and questions. Teens wished to make the instructions and protocols more accessible and easy to follow, for example, by providing short summaries of the studies they were required to review or providing visual elements to understand the concepts. Interestingly, they shared the need to see how all the studies were connected to ***grasp the big picture of teens' online safety research***. They also showed interest in interacting with the design interventions discussed in the research studies for a clearer understanding of how they work:

> *"Like, they would like get another study and people would use their prototype, maybe like let us also use the prototype to actually work on stuff. Because looking at pictures is one thing but like actually using it as another thing." - T6 (15-year-old, Female)*

Teens also required ***smaller wins for continued engagement*** in the program through incentives. More specifically, they highlighted the need for frequent task reminders and a manageable workload owing to their busy schedules. For instance, one teen suggested dividing the UX projects into multiple deliverables with their respective deadlines for smaller wins instead of just presenting them by the end of the program. Moreover, they recommended offering small but regular payments, not in the form of gift cards, to keep them committed to the research and ensure their continued involvement. They also suggested onboarding teens with different roles on social media, for instance, influencers, who can bring unique perspectives and experiences, increasing their interest in the research.

4 DISCUSSION

In this section, we will discuss the implications of our findings and directions for designing future longitudinal programs to enhance teens' online safety.

4.1 Seamless Integration of YAB in Teens' Daily Routines

Through our analysis, we saw that YAB helped teens with their personal development and learning design and research skills which helped them contribute to the program goals. Prior research shows that training teens and teaching them basic UX skills can enhance their quality of participation in online safety research [4] but our study showed that it is important to do it for a longer period as teens felt that frequent discussion of concepts helped in better understanding and becoming more cautious in the digital world. However, teens had busy and varying routines causing scheduling conflicts and time management issues. Teens wanted stricter rules and penalties for attendance and task completion, mirroring the setup of a school with stipulated policies regarding absences and academic performance. Therefore, future research should consider partnering with schools and academic programs where it is part of their regular school schedule rather than having it as an additional commitment. It can be integrated within the school curriculum as a side research opportunity that occurs weekly for which they can get credit or even monetary benefit so they are motivated to join. Moreover, it would also help them get strong recommendations to bolster their profiles for college admissions. However, the choice of conducting the program online or in person would highly rely on whether teens are recruited locally or are geographically distributed. In the case of geographically distributed people, ARC methodology has proved to be beneficial and has been used in the context of people with rare diseases, however, our study shows the potential it holds for doing research with teens on online safety. Therefore, researchers can aptly leverage a combination of synchronous meetings with ARC spaces to carry out research tasks with flexibility and convenient engagement. However, to ensure accountability and increased interaction among teens, researchers can explore gamification elements to make the research activities more enjoyable. For instance, teens suggested forced interaction by asking teens to respond to at least one other teen. On similar notes, researchers can create challenges, set rewards, or competitions to motivate discussions among teens and foster prompt engagement with the activities.

4.2 Embracing Teens' Diversity through Individualized Support and Collaborative Growth

In prior work [4], it has been suggested to train teens to feel confident in effectively contributing to the research tasks, our work shows that it can be difficult due to the varying personalities and technical skills of the members as some teens required more individualized help. Therefore, as suggested by teens, researchers should provide help and guidance according to individual needs. For that, researchers can hold office hours and give frequent tutorials with a detailed focus on the usage of design tools (e.g. Figma). We also saw that teens enjoyed collaborative activities and learning diverse perspectives as it helped them think about certain situations differently. However, teens felt a lack of such group activities and over time, teens grew distant from each other resulting in poor rapport among themselves. Therefore, future programs can plan more group activities as they have the potential to get past individual differences and allow individuals with different sets of knowledge, skills, and expertise to work together toward a common goal. For instance, teens wanted to work on UX projects in groups which can be a great opportunity for teens to bring their unique skills perspectives, and ideas in generating innovative solutions. Additionally, teens wanted to lead problem-solving activities, allowing each teen to bring their problem and work together with others to come up with design solutions. A representative from within the group, having similar and related experiences, fosters credibility and trust which

can encourage teens to collaborate more comfortably. Therefore, future programs should support teens in carrying out such sessions by assisting them in organizing their ideas and establishing clear objectives to guide the process.

4.3 Facilitating Interactivity and Signifying Teens' Contributions

As teens enjoyed learning about the research and giving their feedback, they needed more interaction and engagement with the research activities including multiple discussions and interactive ways to engage with the tasks. As also suggested by teens, future researchers should look into leveraging tables, conceptual diagrams, and short summaries regarding information on research protocols. Moreover, they can employ activities like card sorting [14] and role-playing [15] scenarios for better categorization of the content to review. Apart from that, teens wanted to go beyond the theoretical aspects of the study and experience the proposed design interventions for better understanding and in-depth review. Therefore, future programs can employ more opportunities to have teens take part in research studies as participants for the evaluation of design solutions. For over a year, teens had been taking part in various program activities, they were eager to know the impact of their work in making the online space safer for teens. They wanted to know how their feedback was being incorporated to feel that they were being heard and their contributions mattered. Researchers can employ iterative research approaches to get continuous feedback on their studies and design products. Teens also suggested creating an alumni mailing list or a newsletter for reporting back impact after the conclusion of the program. In addition, researchers can host YAB alumni homecoming where they recognize their contributions in shaping up online safety research while also presenting current program progress. Teens also shared their desire to have the opportunity to present their ideas to the developers. It is essential as they are in charge of their online safety needs assisting them in voicing their opinions and concerns in front of those responsible for making design choices. Researchers can try involving developers in the design phase to inspire them to actively pursue their ideas. However, in case of their unavailability, teens' work can be made publicly accessible and visible online for developers to actively interact and give feedback on their ideas. In summary, our study serves as a guide for employing effective approaches to involving teens in online safety research while also considering their expectations to help them grow professionally.

Finally, we acknowledge some limitations of our study. Firstly, all the participants were from Florida so the results are not generalizable to all populations. Future research should consider involving teens from diverse backgrounds and cultures to have more enriched perspectives. Secondly, our sample size was intentionally kept small to ensure effective monitoring and provide personalized attention to each member. Moving forward, researchers can engage more participants, but it's important to maintain a balance with the number of researchers, as managing a large team can be challenging. Lastly, our study provides guidelines for developing effective long-term programs to involve teens in online safety research but they need validation. In the future, researchers can employ strategies from our study to conduct empirical studies and evaluate their effectiveness in maximizing teens' contribution to online safety research.

5 CONCLUSION

In conclusion, we received useful and promising feedback on the novel approach to involve and train teens in contributing to long-term online safety research. It helped us identify the positive aspects of YAB and practical suggestions for improving future programs to fortify those aspects, ensuring better and continued engagement. The insights gathered helped provide a comprehensive understanding of the teens' experiences and expectations to maximize their beneficence along with the larger goals of the program. Moving forward, it is crucial to further revolutionize the research approaches by incorporating feedback and suggestions from the teens, further assisting them in effectively contributing to the development and evaluation of design solutions for teens' online safety.

ACKNOWLEDGMENTS

This research was supported by the National Science Foundation Award IIS-2333207, William T. Grant #187941, and the University of Wisconsin-Madison's Technology and Adolescent Mental (TAM) Wellness program. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of our sponsors.

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