
Co-Designing with Children to Address “Stranger Danger” on Musical.ly

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Abstract

Young children are increasingly using social media apps from their smartphones. There has been recent news regarding incidents with young children engaging with strangers through these apps (e.g., sexual solicitations and cyberbullying that resulted in suicide). To understand children’s awareness and explore their visions for technologies that can help them manage situations involving online “stranger danger,” we held a participatory design session with a group of seven children, ages 8 to 11 years old, using the app Musical.ly as a design probe. We present the design solutions offered by the children for protecting children from online stranger danger when using Musical.ly.

Author Keywords

Children; Stranger Danger; Online Safety; Participatory Design; Social Media; Privacy.

ACM Classification Keywords

K.4.1 [Public Policy Issues]: Ethics, Human safety, Privacy

Introduction

In 2017, there were several “stranger danger” and cyberbullying incidents in the news that involved young children using an app called Musical.ly [10]. An 8-year old girl was asked to send naked pictures of herself by

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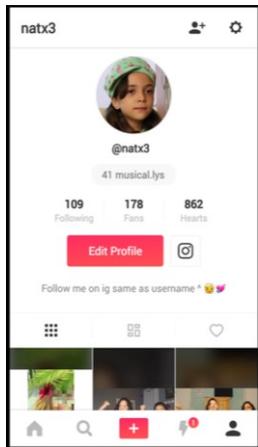
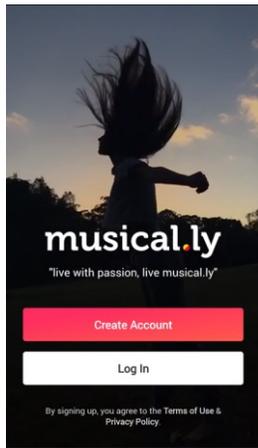


Figure 1. Screenshots of the mobile application Musical.ly used for the design probe mock ups, showing sample login and user profile pages.

a predator posing as Justin Bieber [19], while a 10-year old girl committed suicide after a video of her getting bullied was uploaded to the mobile app [3]. Musical.ly's terms of service aim to comply with the Children's Online Privacy Protection Rule by stating that their service is "NOT FOR PERSONS UNDER THE AGE OF 13" [11]. However, these news reports reflect that children younger than 13 are not only using the app, but are also engaging with strangers through it.

To understand children's perceptions of online stranger danger and explore solutions that can help children manage potentially dangerous situations, we held a participatory design session with a group of seven children ages 8 to 11 years old, using Musical.ly as a technology probe. This poster provides an overview of the children's design recommendations which included parental involvement, alerting others, risk detection, banning, and education.

Background

The phrase "Stranger Danger" has historically been used to teach children about physical safety [8]. It was intended to raise children's awareness of potentially harmful situations by telling them to stay away from people they do not know. While the effectiveness of this method has been questioned [14], it remains a common strategy and phrase among adults (e.g., educators, parents, and policymakers) when trying to teach children how to protect themselves from serious risks, such as abduction.

Meanwhile, today's technological landscape has rapidly brought issues of stranger danger to online contexts. For example, 37% of children between 11 and 16-years old have experienced trolling, 18% aggressive and

violent content, 12% cyber stalking, and another 12% unwanted sexual solicitations [4]. To address these concerns, there has been substantial work conducted in the intersection of children, social media, and online safety within the SIGCHI community (e.g., [9, 12, 21, 22]). Studies have investigated parent's and children's sharing preferences as well as their perceptions of online threats [9]. Others have specifically examined online risk experiences [16–18], though much of this work has focused on adolescents, as opposed to younger children.

Few studies in extant online safety literature directly explore socio-technical interventions to protect children from online risks [12]. Nascent work has been done to empower children to devise their own solutions for managing these risks [7]. We extend these efforts by working with children to co-design social media features that address online "stranger danger."

Methods

We held a Cooperative Inquiry design session [2] with children and adult researchers at the University of Maryland's Kidsteam. We describe this approach and our design session on "stranger danger," which focused on two scenarios using the Musical.ly social media mobile application.

The Musical.ly Application as a Design Probe

Musical.ly is a popular social media application that allows children to create and share short videos, send personal messages, and create live broadcasts (Figure 1). The application has over 200 million registered users and has been among the top 100 apps in the App Store for two consecutive years [6]. We selected Musical.ly for this co-design session as its features,

Tricky Stranger Scenario:

Suzie, a 7-year old girl, uses Musical.ly to share videos with her family and friends. She receives a friend request from a boy named Jessy. He seems to be her age, so she adds him. A few minutes later, Jessy sends Suzie a private direct.ly message. Suzie and Jessy talk for a few minutes. Jessy keeps asking questions. Maybe she shouldn't have told him all about herself.

Cyberbullying Scenario:

Kenny, a 10-year old boy, uses Musical.ly to lip-sync and post for others to see. When Kenny was walking home, a group of bullies picked on him, video recorded it, and posted the video on Musical.ly. Kenny received a lot of mean messages. Strangers were making fun of him because of the viral video of him getting bullied. Kenny felt extremely sad and was afraid to post more musicals.

Figure 2. Design scenarios.

'musical' and 'direct.ly', exemplify the types of communication common to social media which can expose children to issues of stranger danger [1, 13]. "Musers" (musical.ly users) create *musicals*, and use *direct.ly* to send messages to other Musers.

Cooperative Inquiry with Children

We selected Cooperative Inquiry (CI) as our research approach because one of our goals was to understand children's perspectives of their online interactions and to gauge their level of awareness of safety issues such as "stranger danger." According to Wurtele and Kenny [20], when coming up with ways to educate children on safety, youth's perspectives should be incorporated. Most importantly, CI privileges children's insights, knowledge, and design ideas to inform the development of novel, child-centered features in interactive technologies [2]. A 90-minute CI session is comprised of four activities: (1) snack time, (2) circle time, (3) main design activity, and (4) design ideas summary presentation ("big ideas"). Co-design partners were divided up into 2-3 smaller intergenerational groups to complete the activity. Each small group used the "Big Paper" [5, 15] technique, which utilizes large easel-size sheets of paper to allow children and adults to draw out and annotate their design ideas. Two scenarios (Figure 2), based on actual news events and articles publicized over the past two years, were used as design prompts.

Participants

Our design session included seven children and ten adult design partners. The adult participants included graduate students (masters and doctoral) and university faculty. The children came from a variety of socio-economic and educational backgrounds (e.g., public, private, home-schooled). The children were

divided into sub-groups by age and sex. Table 1 further details the child participant's demographics.

Group	Age	Sex	Semesters on Design Team	Musical.ly Experience
Group 1	8	F	3	No
"Younger Children"	8	M	1	Familiar
	8	M	1	Familiar
Group 2	10	M	5	No
"Older Boys"	11	M	3	Muser
Group 3	11	F	3	Muser
"Older Girls"	11	F	1	Muser

Table 1. Participant Demographics Table

Findings

Children in the design session recommended many mobile app features that could help a child who was experiencing a "stranger danger" situation. We saw some interesting differences in preferences based on age and gender, which we summarize below.

Parental Involvement

All groups mentioned parental control features, where parents could monitor their child's Musical.ly account through a separate "parent account." The older boys suggested that parents should supervise their children's activity by receiving *all* their children's posts, while the younger children and older girls preferred that parents only have access to media that children reported. The younger children and older girls created "Tell a Parent" buttons to alert their parents if they felt that online interactions were moving beyond what they could control or understand. The older girls complemented this button with a location-sharing feature.

Alerting Others

The children suggested a separate “Popo” button to alert police if they felt their parents would not be able to contain the situation. Relatedly, the younger children wanted parents to have a method for alerting Musical.ly about dangerous situations. The older girls, on the other hand, suggested having a “Stranger Danger” button to report cyberbullying videos and other potentially harmful situations to help victims.

Risk Detection

All groups suggested features that automatically detect risky content, whether it be words, phrases, or images. The younger children wanted an angry faced emoji to appear instead of inappropriate words or phrases, hiding it from view. They wanted the app to be able to distinguish between real (e.g., the profile belongs to the person it describes) or fake accounts (e.g., a person is posing as someone they are not). If the account was real, a star would appear next to the person’s profile picture. If the account was fake, the profile picture would also display a red dot. The older boys and girls suggested flagging accounts based on keywords or profile pictures. They explained that if a person uses a picture that looks like it was taken off the Internet (i.e., stock photos), the profile would be flagged and blocked. The younger children and older girls wanted to be able to block a person whom they suspected to be an adult or a threat. Once blocked, the profile would then need to be verified by the company’s app team before it could become active.

Banning

The younger children described a “decline” button, in which a child could decline a friend request or message and prevent the person from contacting the child again.

They wanted ways to request banning videos or individuals from the platform.

Education

The older girls and boys also wanted to include educational features in the app that could help teach children about appropriate use of information. For example, learning points would show why users should not share personal information with strangers, or show ways for bullies to become “good Samaritans.” The younger children proposed that the app teach a bully by intervening a negative situation, such as turning the bully’s “mean videos” to “positive” ones.

Discussion and Conclusion

Findings from our exploratory study suggest that: (1) children are more attuned to potentially dangerous situations than stereotypical didactic assumptions might allow, (2) children wanted nuanced and diverse ways to manage potentially harmful situations, and (3) interestingly, as with [7], their designs included adults as mediators and supporters, contrasting anecdotal evidence that children may not want adults to access their social media circles. Overall, we found that younger children wanted more help in *learning* about what Stranger Danger entails and how to avoid it, while older children wanted more options for *managing* it, whether on their own, or with help from an adult. We plan to further probe and parse these exploratory findings in future design sessions.

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