Beyond Age-Based Restrictions: Rethinking Children's Online Safety Through Comparing Parent–Child Perspectives of Risks in User-Generated Content Games

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Abstract

Existing HCI literature on the benefits and risks of User-Generated Content (UGC) games for children often focuses on either parents' or child players' views. Bridging these perspectives is critical for identifying the alignment or divergence between children's and parents' concerns, which provides a more comprehensive image of challenges and opportunities children face in these games. Through a mixed-method content analysis of 2000 reviews about Roblox (one of the most popular UGC platforms) from both parents and children, we identify six key risks children face and investigate how parents' and children's focuses on different risks may shift across age groups. We also propose design recommendations for advancing trust and safety initiatives on UGC platforms by considering children, parents, and developers as key stakeholders. We contribute to rethinking more nuanced safety models for protecting children that are developmentally responsive and context-sensitive, rather than relying on age-based thresholds (e.g., under-13 vs. 13+).

CCS Concepts

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

Keywords

Children's online safety, User-generated content games, Age

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1 Introduction

Children's engagement with various computing technologies, including digital games, has been a long-standing research agenda in HCI, which highlights how children both shape and are shaped by their digital environments as active participants [31, 32, 65, 78, 79, 81, 97]. As digital games continue to play a central role in children's lives today [58, 66], a growing body of HCI literature has begun to investigate the rise of *User-Generated Content (UGC) games* - like Roblox [83] and Minecraft [90] - as a new dimension in children's gaming experiences [28, 36, 40, 48, 67, 74]. In these games, children can design their own gameplay, build virtual worlds, and even monetize their creations, which blur the boundaries between play, creativity, and entrepreneurship [28, 74]. As a result, these platforms are becoming increasingly popular among children, with Roblox having more than 380 million active players monthly [87].

However, the open-ended and participatory nature of UGC games also introduces novel risks for children's online safety. Unlike traditional games curated and controlled by developers, UGC platforms rely on player-created content, which allows harmful material such as violent or sexually suggestive games to bypass moderation [36, 48]. Additionally, under-regulated social dynamics further expose children to risks in these highly customizable spaces [36, 40, 48, 67]. Yet, much of the existing literature on harms in UGC games focuses exclusively on either parents' concerns about their children's play or players' experiences. This disconnect may lead to limited insights into the interplay between how children view their risks in UGC games and how their parents, who are responsible for overseeing their play, approach the same risks. This gap is even more evident considering the lack of research on the differing experiences of risks in UGC games among child players of **various ages**. Indeed, as industry safety mechanisms are largely based on

fixed thresholds (e.g., under-13 chat restrictions in Roblox [47] or COPPA-mandated parental consent [21]), such primarily age-based categories assume that children's risks are uniform within broad age bands, which may oversimplify the complexity and depth of online risks children face in UGC games.

In response, we believe that more research is urgently needed to compare parents' and children's concerns about emerging risks for children in UGC games across different age groups for two main reasons. First, identifying alignment or divergence between parents' and children's concerns can reveal gaps in awareness, communication, and support between the two groups. These insights will help build complementary understandings of the same issues concerning children's online safety. Second, examining how parents' and children's focus on different risks may shift across age groups of players can provide a more nuanced picture of children's online safety, moving beyond fixed age thresholds to developmental and situational understandings of these risks. This coordination is particularly vital in UGC games where the gaming environments are constantly evolving.

This understudied area of research motivates us to explore the following research questions in this work:

- **RQ1: How, if at all, do parents and children express similar concerns about emerging online risks against children in user-generated content games?**
- **RQ2: How, if at all, do parents and children tend to emphasize different risks across various age groups of child players?**

To address our RQs, we chose to focus on Roblox because its creation system allows children to design games with little-to-no programming knowledge, making it a particularly valuable UGC platform where the majority of creators and players are children [29]. Specifically, we conducted a mixed-methods content analysis of 2000 comments collected from Common Sense Media[1] written by children who play Roblox and their parents. Common Sense Media collects reviews about technology and media targeted towards children to help parents make informed decisions about their child's technology and media consumption [22]. Given our motivation to explore both parents' and children's concerns, we believe that Common Sense Media provides comprehensive data for our research focus. Due to the textual and self-reported nature of our data and the strength of content analysis in generating both quantitative and qualitative insights, we operationalize "expressing similar concerns" as *reporting and describing the same risk in both parents' and children's posts* to explore RQ1 and operationalize "emphasizing different risks" as *reporting certain risks more frequently than other risks* to explore RQ2.

We contribute to HCI literature at the intersection of children's online safety in gaming and user-generated content games as a new research agenda in three ways. **First**, we provide one of the first empirical investigations that uncovers the alignment and divergence in how children and parents express and emphasize their concerns about various risks to children in UGC games. This dual perspective supplements our existing understandings of children's risks in UGC games and highlights the need for interventions that address the concerns of both stakeholders. By examining both groups' online reviews simultaneously, we bridge research gaps in existing literature that focuses mainly on either children's or parents' perspectives in isolation. **Second,** we further foreground the relational and age-sensitive differences in both children players' and their parents' reported concerns of such online risks. In doing so, we highlight the importance of taking children's diverse developmental stages (i.e., early childhood, pre-teen, and adolescence) into account when understanding and designing for protecting children's safety in UGC games. Rather than relying on age-based thresholds (e.g., under-13 versus 13+), we call for more nuanced safety models to protect child players that are developmentally responsive and context-sensitive. **Third**, grounded in these insights, we propose a three-pronged approach to advancing trust and safety initiatives on UGC platforms by offering design recommendations tailored to three stakeholder groups that represent distinct yet interconnected layers of children's online play: child players themselves, their parents, and the platform developers. Together, we aim to contribute to creating safer and more trustworthy UGC platforms for children in the future that effectively balance children's developmental stages with their online safety and the creative and social benefits of these platforms.

2 Related Works

2.1 Children's Right to Games and Play and the Associated Risks Across Age Groups

Games and play are fundamental to children's physical, cognitive, and emotional well-being worldwide [24, 54, 55]. Indeed, children's right to play is formally protected under Article 31 of the United Nations Convention on the Rights of the Child [71]. However, despite being a pervasive part of children's everyday lives, digital gaming is often perceived as a "less real" or less legitimate form of play [20, 60]. A large body of research has challenged this perception, showing that digital games can foster social skills and cognitive growth [61, 66, 93]. For example, children may leverage digital games to extend their offline social networks by making new friends in games, staying connected with existing friends through gameplay, and gaining emotional support from various online gaming communities [30, 33, 63, 66]. Additionally, parental acceptance of their children's play [12, 23, 25, 105] and parent-child co-play [11, 70, 89, 94, 98] may promote shared experiences, enrich family interactions and reciprocal learning, and bridge generational divides. Beyond these social benefits, prior research has also emphasized the foundational role of digital gaming in fostering children's media literacy, which is children's ability to critically access, analyze, create, and engage with digital play environments [13, 41]. As such, researchers have highlighted gaming literacy as an important skill for children to learn, solve problems, and create meanings through gameplay, which transforms digital gaming itself to a form of children's situated learning and creative practices [14, 64, 103].

Despite these advantages, without appropriate protection, children's participation in digital games may simultaneously expose them to various risks and harms.

First, excessive immersion in gaming can cause negative effects to children's mental and emotional well-being across various age groups. Gaming addiction is a widely voiced concern,

[1] https://www.commonsensemedia.org

and children may be more at risk than other groups [53, 75, 77]. Children with gaming addiction have been found to have emotional dysfunction, lower median test scores, as well as extremely poor sleep quality, which can lead to a multitude of negative side-effects, including an increase in conduct problems and psychological distress [4, 82]. Additionally, gaming can impact the mental health of children by causing an increase in dissociative behavior [8], a lack of connection to the real world and the conducting of actions that are not formed consciously [76]. However, these vulnerabilities may not be uniform across ages. While younger children are particularly susceptible to dissociative immersion [8], older children and adolescents show emerging neurological markers linked to problematic gaming behaviors [62].

Second, the interactions between players in online gaming can lead to harmful social experiences for children of all ages. As children explore the world of games with other online strangers (either adults or children), unwanted interactions such as harassment, cyberbullying, doxing, threats, trolling, hate speech, and sexual misconduct targeting children may occur, leading to severe and negative effects on children's well-being [18, 40, 44, 46, 58, 67]. Another factor increasing the occurrence of harassment against children is the online anonymity of the perpetrators, creating an environment where the child player does not have (or lacks necessary knowledge about) a method to fight back [7, 67]. Research also shows that social harms like cyberbullying grow more common and impactful during adolescence, and victims report heightened anxiety, depression, loneliness, and psychosomatic symptoms [52].

Third, children, especially adolescents, can also be influenced by "dark patterns" in game design (e.g., players being deceived into spending more money than they expected) [92, 104] **to make unadvised purchases** [109]. As adolescents have been found to influence and account for the majority of consumer spending, there are increasing efforts to target the younger generation to spend online [73]. Since video games often include in-game purchases or advertisements for out-of-game purchases [34, 56, 102], poor financial decisions that children may make can lead them to overindulge in buying in-game materials or fall victim to online scams presented through games [15]. In this sense, children are at a higher risk of developing negative gambling habits due to their young age and lack of education regarding gambling, resulting in substantial unadvised purchases [27, 42].

Finally, gaming can strain parent-child relationships if not managed appropriately by both parents and children. Researchers have also expressed concerns about how digital gaming can lead to decreased communication and trust within parent-child relationships [2, 3, 8, 17, 82]. One reason may be the long history of pervasive, sometimes excessive, societal and parental concerns over children's gaming, which shapes how parents perceive digital games and their risks. Uninformed parents who use excessive control over their children's online gaming through restriction and monitoring can further decrease trust between them [10, 39, 59, 101]. Furthermore, parents and children often have differing definitions of online privacy, threats, and technology use, which lead to more communication conflicts [44, 51, 108]. Therefore, it seems vital for encouraging parents to find a balance between monitoring, restricting, and communicating with their children regarding their online gameplay [5, 7, 10, 15, 44, 51].

Taken together, these works highlight clear tensions between children's very right to games and play and the diverse impacts of modern digital gaming on children's everyday lives across various age groups. This motivates us to provide a more comprehensive picture of parents' and children's concerns about the various emerging risks children face in today's ever-changing gaming world. Such research is critically needed, as a new genre of digital games - User-Generated Content (UGC) Games - is introducing both significant benefits and new challenges and harms to children compared to traditional gaming.

2.2 New Benefits and Potential Harms of User-Generated Content Games for Children of Various Ages

User-generated content encompasses any form of media - videos, mods, games, or virtual environments - created and shared by users of a platform rather than the platform itself. This participatory content creation model enables individuals to contribute to digital ecosystems in meaningful ways. In gaming, this concept has evolved into **UGC games**, where players are both creators and consumers of the experiences they enjoy [80]. Platforms like Roblox [83] and Minecraft [90] are at the forefront of UGC games, offering tools that allow users to design games, build virtual worlds, and craft interactive narratives without advanced computer programming knowledge. The level of accessibility has led to an explosion of user-generated content, with Roblox reporting an average of 88.9 million active daily users in October 2024 [85]. These games have become dynamic playgrounds for creativity, collaboration, and innovation, blurring the lines between player and developer and redefining what it means to engage with digital spaces [29, 91].

Indeed, a growing body of existing literature has highlighted UGC games' two main benefits for children. **First**, *UGC games democratize game design and foster children's creativity by providing accessible tools that lower the technical barriers for children to create.* Platforms like Roblox Studio offer simplified interfaces and scripting languages that enable users of all ages, including children, to design, prototype, and refine their creative ideas without formal programming expertise [19, 28, 74]. By making game creation accessible and integrating it into hands-on, interactive learning experiences [37, 69, 74, 96], UGC games can help nurture children's skills like problem-solving, collaboration, and digital literacy. **Second**, *UGC games create dynamic, inclusive environments and offer economic opportunities that transform children's game play into entrepreneurial practice and financial literacy.* Unlike traditional games with fixed narratives, platforms like Roblox and Minecraft provide a vast array of player-generated content ranging from competitive challenges to collaborative virtual world-building. This not only ensures sustained engagement across diverse audiences [28, 74], but also helps players, especially child players, foster creativity and a sense of ownership through their digital creation [74]. Additionally, the unique economic model of UGC games enables creators to monetize their work through in-game currencies (e.g., Robux). For example, the popular Roblox game "Adopt Me!"—developed by a small team of creators—reportedly earned its creators over $14 million [1]. This blend of creativity and entrepreneurship further

encourages children to view their digital creations as valuable and impactful while also gaining financial literacy.

Yet, compared to traditional gaming, the user-generated and open nature of UGC games also presents significant new challenges and potential harms for children in four ways.

(1) Malicious actors are not constrained by pre-existing system design but can explore alternative user-generated harmful game design. In traditional digital games, harm is typically limited to pre-defined game design features such as chat-based harassment or in-game interaction mechanics [9, 100]. In contrast, UGC platforms like Roblox allow users to create their own digital assets, gameplay mechanics, and social scenarios. As such, children become even more vulnerable to exposure to explicit language, cyberbullying, and predatory behavior [48, 88, 107].

(2) It is more difficult to moderate UGC platforms on a scale compared to traditional gaming. While traditional games operate within a closed, developer-controlled system, UGC games are dynamic and decentralized. These platforms often struggle to keep up with the volume and variety of their user-generated content. For example, Guo et al. discussed the issue of sexually explicit user-generated games and experiences on UGC platforms and how moderation for these games is insufficient due to the participatory nature of game creation on those platforms [36].

(3) The commercialization of UGC games introduces ethical concerns about the exploitation of young creators and players. A growing body of research has widely criticized the ubiquitous presence of game monetization features in UGC games, such as loot boxes in Roblox [16, 38, 48, 49], as a way to promote and encourage gambling behaviors in these games [49, 57, 72, 95]. At a high level, a loot box is defined as a type of microtransaction where a player pays real money to acquire a random, often rare, in-game item [86, 99]. In particular, researchers have warned that compared to adult players, child players may not even have the necessary knowledge and guidance to appropriately understand the nature of loot box and the risks and financial harm associated with such gambling-like gameplay in UGCs, making them misled, deceived, and exploited further in these games [6, 16, 38, 48, 49, 88].

(4) These harms can also be experienced significantly differently across a child's developmental stages, making it even more complicated to fully detect and assess such new risks for children. Younger children may be especially vulnerable to scams or manipulative monetization in UGC games, while adolescents are more likely to recognize but also normalize problematic practices such as bullying. Meanwhile, most industry safety strategies are still age-based. For example, UGC platforms like Roblox apply stricter content filters and chat restrictions for users under 13 [47], and governmental regulations such as COPPA (Children's Online Privacy Protection Act) [21] enforce parental consent for younger players. While these systems provide baseline safeguards, they assume that risks are uniform within broad age bands, which may not account for the nuances of potential harms of UGC games for children of different ages.

In summary, this body of HCI literature has begun to investigate both new benefits and emerging risks of UGC games. Still, little work has been done to directly capture the voices of both child players and their adult guardians across various risks, who are responsible for overseeing their play practices. Even fewer studies examine the role of children's ages to further unpack the nuances and complexities of these risks for children. Therefore, we believe that comparing and bridging children's and parents' voices can provide much-needed insight into children's challenges in UGC games from both sides, especially by taking children's diverse developmental stages into account.

3 Methods

3.1 Data Collection

To understand children's and parents' actual concerns about UGC games, we chose Roblox as a valuable case of UGC games because Roblox is extremely popular among children [87], and the majority of creators and players on Roblox are children [29]. We collected real-world, self-reported stories from children and parents about Roblox on Common Sense Media [68]. We chose Common Sense Media, rather than other gaming-specific online forums or social media, for two primary reasons. First, Common Sense Media features a vast collection of reviews from real-world users of user-generated content games, especially from Roblox [83]. Second, Common Sense Media is a large library of independent and verified **age-based** ratings and reviews from both child users and their parents [22]. This unique combination can help us effectively compare children's and parents' concerns about children's risks in UGC games. All reviews posted on Common Sense Media include whether the poster is a parent or a child, along with their age. If a parent posted a review describing their child's experiences, it also included their child's age (e.g., "a parent of a 12-year-old"). Such age-related information is especially valuable for this study, because **the age of the child may profoundly affect their cognitive development and how they are exposed to and experience various risks in UGC games.**

We developed a Python script using Scrapy[2] to automate the extraction of user-generated reviews from Common Sense Media. The script gathered key metadata, including username, reviewer role (i.e., child or parent), age (age of the child poster or age of the parent poster's child), rating for Roblox (on a scale from 1: very negative to 5: very positive), and the detailed reviews. Using this approach, we collected all publicly available reviews of Roblox from both children and parents posted on Common Sense Media between July 2009 and May 2024 (N=7081). To ensure the quality and relevance of our dataset, we excluded duplicate reviews, non-English reviews, and reviews with fewer than five words that are insufficient for explaining the poster's opinion about Roblox (e.g., "I like it" or "Not a good game"). Despite using publicly available data from Common Sense Media, we stored the dataset in privately shared spreadsheets and removed any potentially identifiable information, such as usernames and locations, to protect user privacy.

To conduct a more focused and in-depth data analysis, we randomly sampled 1000 reviews each from children and parents over the past two years to capture the most up-to-date views. This resulted in 2000 reviews for our data analysis, with an average word count of 191.87 (SD = 146.42). We believe that a sample of 1000 reviews from each group is sufficient to provide both quantitative and qualitative insights into addressing our research questions.

[2]https://github.com/scrapy

3.2 Data Analysis

We employed Content Analysis [50] to systematically examine the collected online reviews and gain insights into how parents and children report and express their concerns about various emerging risks in UGC games. Content Analysis involves both qualitative and quantitative analytical procedures and often includes the following steps: (1) researchers closely read the collected data to establish a codebook with defined categories or values, allowing for qualitative analysis or hypothesis testing; (2) researchers code the data independently and refine the codebook through iterative adjustments based on team discussions; (3) researchers collaborate to review and reconcile the coded data and perform appropriate statistical testing to identify significant patterns and relationships.

To establish the codebook, we randomly sampled 25 posts from parents and 25 from children (50 posts total), with five posts from each user rating category (1: very negative to 5: very positive). These posts served as the foundation for developing the initial codebook collaboratively. We then iteratively refined the codebook, focusing on consolidating similar codes and eliminating irrelevant and overlapping codes. This resulted in a final codebook with 17 distinct codes. Example codes include: *"Horror or scary game content for children," "Sexual game content for children," "Depictions of physical violence in game,"* among others. For example, if a post reports that the player has encountered UGC content depicting physical violence between entities/characters in the game, it would be coded as *Depictions of physical violence in game*. In the codebook, each code was specifically defined to avoid overlaps and to better orient the data analysis.

After establishing the codebook, we conducted a mixed-methods analysis to analyze the dataset. Our data analysis included the following steps. First, five researchers followed the codebook to independently code five posts from parents and five posts from children. They then compared their codes and iteratively resolved disagreements. After one round of initial coding, they reached an average pairwise agreement rate of 88% (Fleiss' Kappa for more than three coders: 0.887), indicating a high level of inter-coder reliability. Second, after reaching this agreement rate, a total of 2000 randomly selected posts from parents and children were divided equally among the five researchers. Each of the five researchers then read 400 posts (200 from parents and 200 from children) line by line and coded them following the codebook. Third, all authors collaborated on identifying meaningful quotes to appropriately explain the risk codes and key findings. In this process, some reviews were coded with multiple risk codes because they contained detailed descriptions about multiple risks children face in UGC games. Lastly, we performed additional statistical analyses of the coded data (see section 5 for more details) to investigate whether parents and children may tend to emphasize different risks (i.e., reporting certain risks more frequently than other risks) across various age groups of child players (**RQ2**). Yet, given the exploratory nature of this study and the scarcity of prior research addressing these research questions, no hypotheses were advanced. The intention of this exploratory approach was to seek various possibilities and to leave room for unforeseen findings.

4 RQ1 Results: Explaining Key Risks in UGC Games Identified by Both Parents and Children

Our analysis of parents' and children's concerns about online risks against children in UGC games, especially Roblox, reveals 15 distinct risk codes from parents' comments and 16 from children's comments. Figure 1 presents the overall distribution of risk codes and the corresponding percentage of posts from parents and children. Among all the identified risks, six of them were reported in more than 10% of both parents' and children's posts, meaning that they were most frequently mentioned risks across both parents' and children's reviews.

Therefore, to address RQ1, the most important insight from our results is that parents and children indeed express similar concerns about major online risks for children in UGC games such as Roblox. Specifically, both parents and children view the following six risks associated with UGC games as more critical compared to other risks: (1) *depictions of physical violence*; (2) *gaming becoming online dating*; (3) *bullying, harassment, and trolling*; (4) *leaking of personal information*; (5) *encouragement of unauthorized purchases*; and (6) *ineffective moderation* in UGC games such as Roblox. Table 1 presents our key findings for RQ1.

Notably, our analysis did reveal some slight differences between parents' and children's concerns about such risks. As shown in Figure 1, while parents and children express similar concerns (i.e., both groups' posts mainly report and describe the same risks), certain concerns only emerge in one group. For example, some of the parents' reviews were coded as "concerns about the game developers' personal values," but no children's reviews were assigned this risk code. Similarly, while both groups demonstrate their concerns about certain risks, they show a differing focus. Below, we further explain the six key risks in UGC games identified by both parents and children.

4.1 Depictions of Physical Violence in UGC Games

23.4% of collected posts from parents and 28.4% of posts from children describe their concerns about the presence of violence and violent content in UGC games, the highest among both children and parents. The similar reporting rates between parents and children also suggest this is a highly visible issue that both groups can readily identify. This could include depictions of violent actions against avatars, the presence of blood and gore, and the use of weapons.

"There are some violent games in Roblox that, when your character dies, it falls apart with blood. [...] sometimes, if the player wanders into out-of-game space, the player will explode, and their body parts will fly everywhere with visible blood." (Child player, age 13)

"Roblox has several genres of violent games such as first-person shooters, murder, Russian roulette, horror, battle royale, zombies, heists, and if you are able to go deeper into the site, you can even find torture and suicide games." (Parent of child player age 10)

Such violence in games, including *"visible blood"*, creates intense emotional experiences through a combination of visual effects, sound, and gameplay mechanics. Some games can also have more mature themes, like *"Russian roulette"* or *"torture games"*, and can be harmful if younger children are exposed to them.

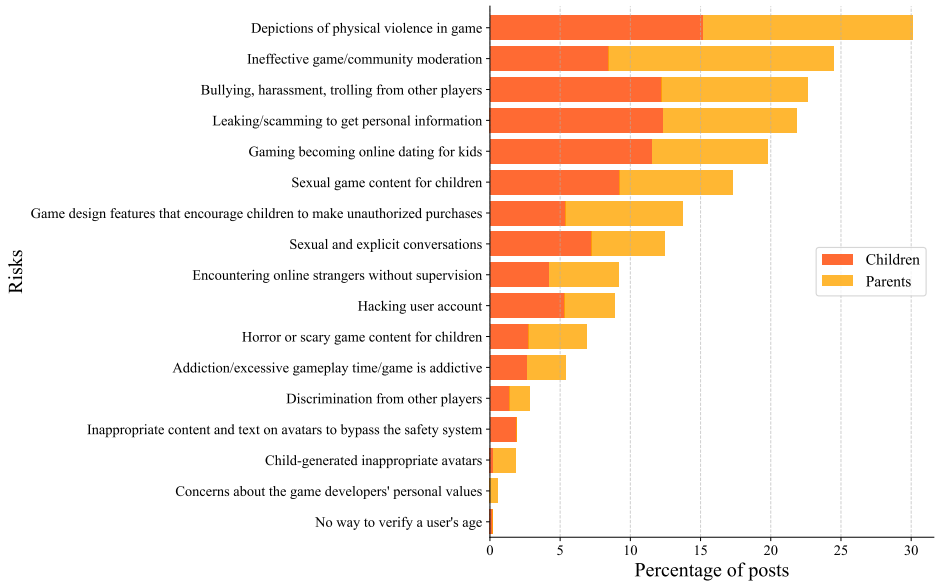

Figure 1: Distribution of Online Risks Against Children in UGC Games (Roblox) Reported in Parents' and Children's Posts

Risk Category	Parents (%)	Children (%)	UGC Game-Specific Heightened Risks
Depictions of Physical Violence	23.4	28.4	Users can import external assets to create more realistic violence. Game mechanics can be designed to reward violent behavior.
Gaming Becoming Online Dating	12.9	21.5	Players can create dedicated dating spaces with custom intimate animations. Improper interactions can extend beyond UGC game platforms and cause worse harm.
Bullying, Harassment, and Trolling	16.3	22.8	Paid-only item system can create social hierarchies that enable these harms.
Leaking/Scamming Personal Information	14.9	23.0	Scammers can create legitimate-looking games as phishing tools. Information sharing often extends to external platforms.
Encouragement of Unauthorized Purchases	13.1	10.0	Game creators can design mechanics to promote predatory or unavoidable purchases.
Ineffective Game/Community Moderation	25.2	15.7	UGC games create context-specific moderation criteria, which makes moderation difficult.

Table 1: Six Most Frequently Reported Risks in UGC Games (Roblox) Across Both Parents' and Children's Posts (RQ1)

Besides causing direct emotional impact, these unique affordances to display violent content and conduct violent behavior can also intensify harmful behaviors among players. For example, as one parent of a child player age 8+ notes,

"Kids of all ages can bully children by coming to their homes, forcing themselves in, 'killing' in home invasions, and stealing from them, etc. While this may not seem like a big deal to adults, this can be to young children who are bombarded by groups of kids who come in gangs to their homes."

This example highlights how adults and children may interpret virtual violence differently. Even when children recognize that they are situated in a virtual gaming world, they can still experience distress when their digital "home" is invaded or destroyed, as these spaces often carry emotional and social meanings. Such incidents also reveal a gap in how parents and children understand digital spaces. While parents sometimes think that it *"may not be a big deal,"* repeated exposure to violent or aggressive scenarios may shape children's attitudes toward violence because of the emotional weight and social dynamics involved.

As a result, pervasive violent content can have a long-term impact, especially on shifting children's attitudes toward violence. As one parent of a child player, age 10, notes,

"In lots of games, you can kill other people to get money and blow up buildings to points. So you see that Roblox can really confuse your child's mind."

This demonstrates how UGC games' creative nature can also enable them to reward violent actions, potentially generating conflicting moral messages or emotional confusion for children.

4.2 UGC Gaming Becoming Online Dating for Children

While Roblox policies explicitly prohibit *"romantic or flirtatious gestures, pursuing romantic relationships online, and engaging in sexually explicit conversations"* [84], 12.9% of collected posts from parents and 21.5% of posts from children describe the prevalence of these prohibited behaviors, known colloquially in the community as "Online Dating" or "ODing." The different rates between parents (12.9%) and children (21.5%) of online dating incidents also suggest that many of these interactions may occur without parental awareness. Our results reveal that UGC games' creative and social features can not only facilitate realistic dating behaviors within the platform but also enable risky interactions that extend beyond the game's boundaries.

On the one hand, both parents and child players have reported diverse instances of online dating behaviors within the game that circumvent Roblox's rules. For example,

"The main thing is users who go on looking for relationships, they are called Oders. They actively pursue others in a game and can then try to suggest things like kissing, or more like suggesting lying on top of someone." (parent of child player age 9+)

"ODer will chat you outside of the server, ask for your age, and say inappropriate phrases such as 'lets kiss' 'lets have sex', and mature things like that." (child player, age 13)

These comments reveal how players can exploit the platform's avatar interaction capabilities to simulate mature behaviors, turning innocent gaming features into tools for inappropriate expression. The use of specific terminology, such as "ODers," suggests the development of a subculture around these prohibited behaviors, implying that platform rules have been commonly ineffective in protecting child players.

On the other hand, these personalized interactions can frequently extend beyond the game's controlled spaces. As one child previously notes, players seeking romantic or sexual interactions often approach others *"outside of the server"*, meaning these conversations can occur on external platforms such as social media or private messaging apps. This migration to less monitored spaces can create even more concerning offline risks, as one parent of a child player age 14 highlights, *"It would be very easy for a predator to make a Roblox account and online date a kid. The thing I'm concerned about is that they can find these kids offline, and it does."*

The progression from in-game to external platforms significantly increases the potential for real-world harm, including risks of grooming and exploitation. The situation becomes especially dangerous if interactions escalate to in-person meetings.

4.3 Bullying, Harassment, and Trolling from Other UGC Game Players

Our analysis shows that 16.3% of parents and 22.8% of children express concerns about bullying, harassment, and trolling from other players in Roblox. These behaviors are reflected in both parents' and children's reviews:

"Every player in the game is very judgmental and competitive with one another." (Parent of child player age 13)

"Whenever there is some sort of toxicity or other issues between a couple of players, other people catch on to this as if it's some sort of disease. A mass of people that I meet in Roblox always try to be rude to me, and many other people." (Child player, age 14)

"People cyber-bully, call you stupid, swear, and say offensive things about religion and race, even if Roblox tries its best to hashtag out [censor] swearwords and possibly offensive words." (Parent of child age 12)

These reviews reveal how bullying has evolved from isolated incidents to a systemic issue causing a broader toxic culture where being *"very judgmental"* has become normalized. In particular, these harmful interactions can manifest in both explicit and subtle forms. Most offensive behaviors in the game involve explicit, aggressive language through Roblox's live text chat, including direct verbal abuse through swearing, threats, and discrimination targeting religion and race.

Indeed, our results highlight how offensiveness has been systematically embedded in the UGC gaming culture. The 6.5% higher reporting rate among children also suggests that harmful behaviors can occur during routine gameplay that parents may fail to recognize. Among all toxic behaviors, judgment about other players' avatar appearances and the purchases of items using in-game currency are major sources of bullying in Roblox:

"Right after joining a game, I was mercilessly bullied for my appearance (I was wearing a pink sweater. That's literally it)." (Child player, age 12)

"If you can't afford to spend real money prepared to be called a 'noob' and be constantly made fun of by so-called pros (who usually buy and dress in the most expensive and 'cool' clothing)" (Parent of child player age 14)

Here, the freedom to customize avatars also creates space to judge others based on their avatars' appearance and clothing choices. Notably, since many in-game items can only be purchased with paid currency, such judgments are often related to how much money others have spent in the game. The term *"noob"* is thus used to specifically target players who do not have paid cosmetic items. This transformation creates a troubling hierarchy based on real-world economic status, leading to social inequalities in the virtual space.

4.4 Leaking or Scamming to Get Players' Personal Information

While most unsafe interactions (e.g., bullying and harassment) pose emotional impact in-game, some may extend beyond the game's scope to impact offline safety. Indeed, one such threat is the extraction of sensitive personal information from child players. From our findings, both parents (14.9%) and children (23%) raise significant concerns about the risks of personal and account information being leaked or shared through deceptive in-game interactions.

A major driver of this vulnerability is the monetization system in UGC games, which creates a culture around exclusive items and paid content. This system fuels players' desire for status symbols, such as in-game currency or limited-edition accessories, making children especially susceptible to manipulation. Scammers exploit

these desires by designing games or messages that bait users with the promise of rewards.

"Some people make scam games [...] they will ask for your password, claiming to give you things too good to be true, like Robux [in-game currency] for free." (Child player, age 9)

"Accounts are continuously being hacked for limited items [...] by grown people who figured out your child is an easy prey." (Parent of child player age 16)

These scam tactics are intentionally deceptive, targeting young players who may not yet have the digital literacy to detect fraud and can be lured into the promise of free Robux. Additionally, players and parents alike describe how the hackers can be *"grown people"*, trying to access the players' *"limited" items"* or gain access to their payment systems.

Even more troubling is when leaked personal information can cause threats beyond the screen. Unintentional information leaks can leave younger, less aware children unprepared and vulnerable. A parent of a child player age 16 reflects on the potentially dangerous outcomes of such data exposure:

"The safety and privacy concern is that people or kids can post their private stuff like Discord, email, where people live [...] But you do not want some person showing up to your door."

This progression from digital vulnerability to potential physical threat highlights how children players' compromised personal information can create high safety risks, particularly when children are deceived into sharing contact details or location information.

4.5 Game Design Features That Encourage Children To Make Unauthorized Purchases

While our data does not suggest that Roblox is explicitly designed to induce unauthorized purchases, it reveals how the combination of UGC, extensive customization options, and a monetized in-game economy can, in turn, foster a culture where spending is normalized. Beyond rule-violating game designs that directly scam child players, our findings reveal prevalent yet permissible design patterns that indirectly exploit child players. 13.1% of collected posts from parents and 10% of collected posts from children express concerns about UGC games that create a money-first consumerist atmosphere, making players more prone to impulse and unauthorized spending.

The foundation of these concerns lies in Roblox's virtual currency system, Robux, which can generate income for the creators. One parent of a child player, age 10, explains,

"The biggest problem in the game is Robux, the online currency in the game. Kids can spend money on the game. If your child does this, you should explain to them the value of money before they go on to Roblox again."

This quote highlights how younger players may struggle to grasp the relationship between digital spending and the *"value of money."*. The situation is further exacerbated by Roblox's removal of non-monetary ways to earn currency, which previously offered children a more accessible form of participation. A child player (age 10) also reflects,

"After 2016, Tix was removed (Tix is an old currency you could get for free). [...] I had to get Robux, which costs real-life money."

By eliminating free alternatives like Tix, the game places more weight on paid transactions, encouraging children to associate gameplay progress and customization with the need for *"real-life money."* In doing so, the platform's open UGC ecosystem, where most games are created by other users, can inadvertently propagate design patterns that intensify this pressure. Some of these games adopt monetization strategies that go unchecked, which players and parents alike describe as overly aggressive or *"greedy."* For instance,

"Robux will be a thing that you cannot escape when a game asks for 20 Robux for not losing a 1700 Robux pet. The game will always want Robux in similar ways, from a 5 Robux shirt to a 1700 Robux pet. [...] It's designed as a trap to grab money out of your pockets." (Child player, age 14)

This quote reveals how players may encounter frequent ads or pop-ups encouraging them to buy items. In some cases, spending can feel like an integral part of the gameplay itself, such as paying to avoid losing a valuable item. This can lead to confusion or impulsive purchases that can feel like a *"trap to grab money,"* which, over time, may even shape children's understanding of spending as a normal or expected part of play. The pressure to own in-game currency is further reinforced by social dynamics. As discussed in Section 4.3, children who are unable to make purchases may face exclusion or bullying. In such cases, the motivation to spend becomes entangled with the desire to belong or to avoid judgment, which may trigger additional unauthorized spending.

4.6 Ineffective Game and Community Moderation on UGC Game Platforms

Our analysis reveals that 25.2% of parents and 15.7% of children express concerns about ineffective moderation. These moderation challenges intersect with all previously discussed risks (e.g., online dating), highlighting challenges from three key aspects: (1) circumvention of existing moderation systems, (2) system limitations in detecting nuanced inappropriate content, and (3) insufficient cross-platform moderation.

First, children and parents describe how players can easily evade chat filters. Some use special characters or spacing to avoid detection, allowing inappropriate language and interactions to persist.

"People can be creative with getting around the filter, they can either break words into letters or use symbols to fool the system". (Child player, age 15)

"Roblox has a moderation team to combat any rule breakers, but it isn't all that reliable, some inappropriate stuff does fall through the cracks[...] The chats within the games are live and not documented, so there is no way for parents to monitor those conversations." (Child player, age 13)

The circumvention of basic text filters using methods like "break words into letters" or "use symbols", not only limits the effectiveness of content filtering, but also makes it difficult for moderators or parents to detect harmful interactions. This "falling through the cracks" can increase children's exposure to inappropriate and dangerous scenarios such as harassment, trolling, or unwanted encounters with strangers.

Second, beyond chat, UGC game environments introduce moderation challenges that go beyond text-based filters. The interactive and creative nature of these games means inappropriate content can appear in many forms. These manifestations can include inappropriate avatar behaviors (e.g., *"some players simulate sexual*

activity by moving their avatars"), harmful games (e.g., *"improper games like sexual games [...] are still too many that people can play"*), inappropriate clothing (e.g., *"Players can create clothing that may be offensive or too revealing"*), inappropriate audio (e.g., *"some people have a bypass to listen to audios that talk about porn, sexual things, and jokes using a lot of bad language"*), and disturbing player behavior (e.g.,*"some people use the beds for sexual activities"* and *"Some players like bombing others off the trail right before the finish line"*).

These examples illustrate how moderation can be challenging due to ambiguity and context. Many of these behaviors blur the line between inappropriate and simply disruptive, making them difficult to flag using automated moderation systems. For example, the difference between following and stalking, or between harassment and teasing, often hinges on social cues and repeated patterns, which are areas where traditional moderation systems may fall short.

Third, moderation also becomes more complicated when UGC platform-related content spills onto third-party sites such as YouTube or Discord, where the platform's in-game rules may no longer apply. Children can then encounter mature content associated with the UGC platform outside gameplay sessions.

"Some Roblox YouTubers make inappropriate content containing drinking, drugs, smoking, etc." (Child player, age 10)

"Videos of avatar sexual assaults can be found on YouTube, which are hard to see in the game." (Parent of child player age 8)

"Many YouTubers swear in their Roblox videos." (Child player, age 12)

In these cases, the inappropriateness is not part of the UGC game itself, but becomes accessible through its media ecosystem. This creates extended exposure to harmful themes for young players, even after they log off the game. Moreover, because this content is produced by community members or influencers, it carries a sense of legitimacy that may make it more persuasive or attractive to children.

5 RQ2 Results: How Parents and Children Emphasize Different Key Risks in UGC Games Across Child Player Age Groups

In this study, we also aim to reveal how **age** may shape both parents' and children's concerns about these emerging risks children face in UGC games, for instance: if younger children (and/or their parents) and older children (and/or their parents) may emphasize different risks (i.e., reporting certain risks more frequently than others). Therefore, to address **RQ2**, we first conducted a linear regression analysis to explore whether a linear relationship exists between child age and the frequency of the six key risks mentioned in parents' and children's reviews (e.g., the older a child is, the more or less frequently they or their parents would report certain risks). However, the results suggested that the overall age alone was not associated with how parents and children may emphasize certain risks over others, as it did not strongly predict the frequency of risks mentioned in parents' and children's reviews (**section 5.1**). Therefore, we further explored whether grouping child players based on well-established standards for child developmental stages [43] might reveal more nuanced insights into exploring RQ2 (**section 5.2**).

5.1 Overall Age vs. Frequency of the Six Key Risks

As shown in Figure 2, the overall regression model to explore the relationship between child age and the frequency of the six key risks mentioned in parents' and children's reviews yielded a weak fit (R^2 = 0.1482, r = 0.3849). The relatively low R^2 value (the proportion of variance explained by age) suggests that age accounts for only a small portion of the variation in how frequently risks are mentioned. Similarly, when analyzing children's and parents' reviews separately, the models for children (R^2 = 0.0678, r = 0.2604) and parents (R^2 = 0.1448, r = 0.3805) both revealed weak positive correlations, indicating that **while mentions of risks tend to increase slightly with child players' ages, the relationship is not strongly linear.**

We then examined each of the six key risks separately to identify whether particular types of risks demonstrated stronger age-related patterns. For children's reviews, *ineffective game/community moderation* (R^2 = 0.1345, r = 0.3667) and *bullying, harassment, and trolling* (R^2 = 0.0863, r = 0.2937) showed the highest yet still weak positive correlations with age, indicating that mentions of social and moderation-related risks appear slightly more frequent in reviews from older children. For parents' reviews, the risks showing the clearest linear increases with age were *ineffective game/community moderation* (R^2 = 0.2893, r = 0.5379) and *encouragement of unauthorized purchases* (R^2 = 0.1789, r = 0.4229). Although the correlation for *ineffective game/community moderation* approached moderate strength, the overall pattern remained weak. The remaining risks demonstrated negligible linear associations with age. One potential explanation for this could be that young children are too young to recognize risks, and adolescents are independent enough to believe they are capable of mitigating them. This could, in turn, leave the pre-teen group of children as the most likely to report risks, and thus their parents as the most worried about risks on their behalf. In this sense, a linear model may not capture the nuances of how children and parents collectively approach these risks dynamically.

5.2 Age Groups vs. Frequency of the Six Key Risks

Since the linear models suggested that there was no strong linear relationship between the overall age alone and frequency of the six key risks, we decided to further unpack the role of **age** not as one uniform category but as more specific age groups to explore potential non-linear trends. In doing so, we grouped child players into three age groups (under 6: early childhood/preschoolers; 6–12: pre-teen/school age children, and 13–17: adolescents/teenagers) based on standard child developmental stages [43] to explore more nuanced patterns regarding how parents and children may emphasize different key risks across child age groups. Table 2 summarizes our main findings.

Specifically, as depicted in Figure 3, we report the age distribution of child players as derived from either their own posts or their parents' posts that mention the six most frequent risks in Roblox. The percentages indicate the proportion of each risk relative to the total number of comments within the corresponding age group.

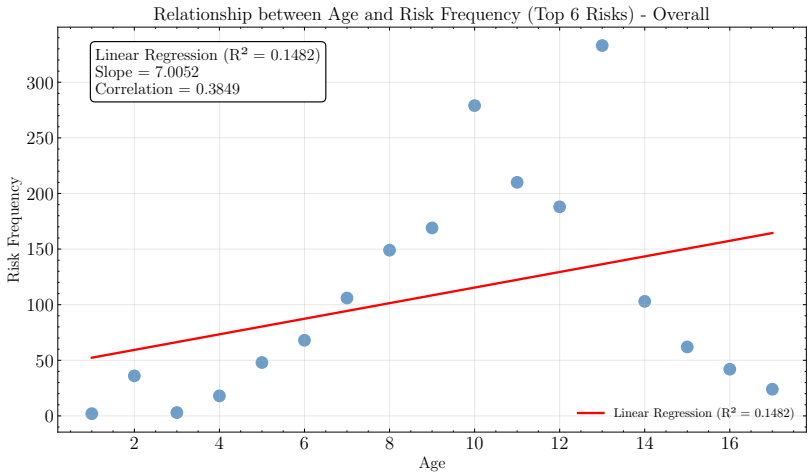

Figure 2: Linear Regression Analysis of Overall Age vs. Frequency of the Six Key Risks

For instance, from the children's side, in the 6–12 age group, 175 comments mention the risk of depictions of physical violence, which accounts for 28.18% of all comments (N=621) in that group.

To examine age as a categorical variable, we used the chi-square test [26] because it is well-suited for assessing whether there is a significant association between two categorical variables, in this case, age groups and the frequency of mentions for the top six risks. First, we conducted a chi-square test to examine **whether parents' emphasis on the six most frequently mentioned risks differed significantly across the three child player age groups** (under 6, 6–12, and 13–17 years). The analysis revealed significant differences for three risks. Parents of older children mentioned *bullying, harassment, and trolling* ($\chi^2 = 16.13$, $p = 0.0003$, $V = 0.14$) and *ineffective game/community moderation* ($\chi^2 = 18.58$, $p = 0.0001$, $V = 0.15$) significantly more frequently, suggesting that these social and community-related risks might become increasingly salient for parents during their children's adolescence. A smaller but still significant difference was also observed for *encouragement of unauthorized purchases* ($\chi^2 = 6.75$, $p = 0.034$, $V = 0.09$), with parents of child players aged 6-12 reporting relatively more frequently compared to other groups. This result potentially reflects the developmental stage when children begin to engage more with in-game transactions. In contrast, no significant differences were identified in parents' mentions of *depictions of physical violence*, *leaking/scamming personal information*, or *gaming becoming online dating* across different child player age groups. This indicates that parents tend to report these risks with comparable levels of concern regardless of their children's age.

Second, we conducted a similar analysis to investigate **whether children's emphasis on the six most frequently mentioned risks differed significantly across the three child player age groups.** Our results revealed significant differences across age groups for two risks. Specifically, children's reports of *bullying, harassment, and trolling* varied significantly across age groups ($\chi^2 = 7.27$, $p = 0.0263$, $V = 0.09$), with older children (13-17) reporting these concerns more frequently than younger groups. A plausible explanation for this trend may be that as adolescents spend more time in socially interactive gaming environments, they become more exposed to peer-related harassment and more aware of it. Even more pronounced differences were identified for *ineffective game/community moderation* ($\chi^2 = 14.89$, $p = 0.0006$, $V = 0.12$). Here, older children mentioned this risk more frequently than younger groups. One possible reason may be that as they grow up, they start to develop a higher awareness of platform governance and thus are more capable of recognizing the issue of absent or inadequate moderation on those platforms. In contrast, the remaining four risks did not differ significantly across age groups. This suggests that these issues are mentioned with relatively equal salience by children themselves throughout their childhood.

Third, to depict a more comprehensive image, we examined **whether children's and parents' emphasis on the six key risks *combined* differed significantly across the three child player age groups.** Our analysis revealed significant differences across age groups for two risks: *ineffective game/community moderation* ($\chi^2 = 33.80$, $p < 0.001$, $V = 0.14$) and *bullying, harassment, and trolling* ($\chi^2 = 27.13$, $p < 0.001$, $V = 0.12$). Mentions of *ineffective game/community moderation* were rare among the youngest group (10 mentions under 6), but rose sharply in pre-teen (124 mentions, ages 6–12) and remained high in adolescence (139 mentions, ages 13–17). This suggests that concerns about moderation intensify as child players begin to engage more independently with UGC platforms. Likewise, mentions of *bullying, harassment, and trolling* were low under 6 (20 mentions), followed by substantial increases in both the 6–12 age group (177 mentions) and the 13–17 age group (177 mentions). These patterns suggest that social risks become increasingly salient as children grow older and interact more actively in UGC platforms. In contrast, no significant age differences were observed for the remaining four risks.

Lastly, we explored **whether children's and parents' emphasis on the six key risks differed significantly within each age group.** For the youngest age group (under 6), no significant differences between children's and parents' mentions of any of the six risks were observed, with all p-values exceeding 0.05 (e.g., *depictions of physical violence*: $\chi^2 = 0.006$, $p = 0.94$, $V = 0.01$; *encouragement*

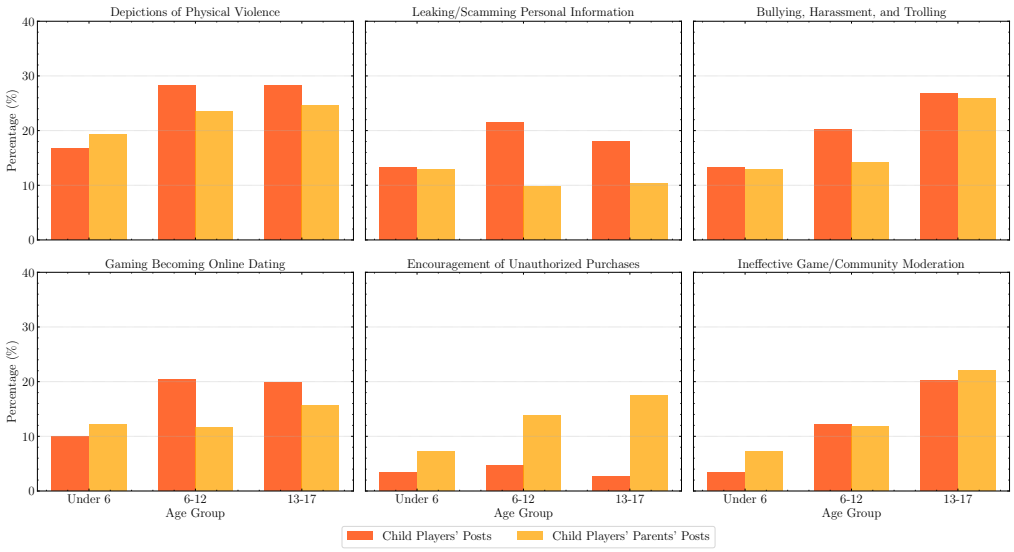

Figure 3: Distribution of the Six Key Risks Against Children in UGC games (Roblox) Mentioned in Children's and Parents' Posts Across Different Age Groups of Child Players. (Note: The label of "Child Players' Posts" represents children's own perspectives, which also means that the players' age was reported in their own posts. The label of "Child Players' Parents' Posts" represents parents' perspectives, which also means that the player's age was reported in their parents' posts.)

Identified Major Risks	**RQ2: How Parents and Children Emphasize Different Risks Across Child Age Groups**
Depictions of Physical Violence	Frequencies of mentions remain stable across all age groups, and there are no major differences between parents' and children's reports.
Gaming Becoming Online Dating	Frequencies of mentions do not vary significantly across age groups, although children aged 6–12 mention this risk more frequently than their parents.
Bullying, Harassment, and Trolling	Frequencies of mentions increase with age, especially in the 13–17 group. Children emphasize this risk more than parents in the 6–12 group, but both parents and children somewhat tend to emphasize it during adolescence.
Leaking/Scamming Personal Information	Frequencies of mentions remain stable across age groups, but children emphasize this risk more than parents in both the 6–12 and 13–17 groups.
Encouragement of Unauthorized Purchases	Parents' frequency of mentions is highest in the 6–12 group, while children's frequency of mentions decreases as they get older. Parents emphasize this risk more frequently than children in both the 6–12 and 13–17 groups.
Ineffective Game/Community Moderation	Frequencies of mentions rise sharply with age, especially in the 13–17 group. Children mention this risk more often than parents in the 6–12 group, and both groups mention it more frequently as children grow older.

Table 2: How Parents Children Emphasize Different Key Risks Across Child Player Age Groups (RQ2)

of unauthorized purchases: $\chi^2 = 0.14$, $p = 0.71$, $V = 0.03$). These results indicate that both children and parents recognized risks at comparable levels at this stage. However, the 6–12 age group did reveal significant divergences between children's and parents' reports across multiple risk categories. Compared to parents, children mentioned *leaking/scamming personal information* (21.58% vs. 9.80%; $\chi^2 = 26.27$, $p < 0.001$, $V = 0.16$), *bullying, harassment, and trolling* (20.29% vs. 14.19%; $\chi^2 = 6.15$, $p = 0.013$, $V = 0.08$), and *gaming becoming online dating* (20.45% vs. 11.66%; $\chi^2 = 14.42$, $p < 0.001$, $V = 0.02$) significantly more frequently. In contrast, parents highlighted *encouragement of unauthorized purchases* (13.85% vs. 4.67%; $\chi^2 = 24.85$, $p < 0.001$, $V = 0.16$) significantly more frequently. In the 13-17 age group, divergences between children's and parents' reports narrowed but remained evident in two ways. On the one hand, parents emphasized *encouragement of unauthorized purchases* (17.53% vs. 2.70%; $\chi^2 = 44.32$, $p < 0.001$, $V = 0.26$), while children concentrated more on *leaking/scamming personal information* (18.02% vs. 10.39%; $\chi^2 = 5.91$, $p = 0.015$, $V = 0.09$). For other risks, children's and parents' mentions did not differ significantly. These results demonstrate that divergences between children's and parents' emphases on key risks on UGC platforms are minimal in early childhood, most pronounced during pre-teen (6-12), and moderate

during adolescence, with parents consistently highlighting financial risks while children focus on more experiential and social risks.

6 Discussion

As summarized in Table 1, our analysis has revealed six primary risks that children face in UGC games, which consistently emerge across both children's and parents' online reviews of Roblox (**RQ1**). Despite this significant consensus between parents and children, they may still emphasize the same identified risk differently (i.e., reporting certain risks more frequently than others) across various child player age groups (**RQ2**). More importantly, as presented in Figure 2 and Table 2, these patterns do not show a clear linear relationship. Rather, our findings collectively point to the significance of viewing children's safety on UGC platforms not as a singular or static concern, but as a dynamic, intergenerational issue shaped by differing experiences, developmental stages, and platform literacies.

Grounded in these results, in this section, we first discuss how our findings reinforce and extend prior works on children's safety in digital environments through comparing and bridging both children's and parents' reported concerns, including potential differences in how they may emphasize different risks across child player age groups. We then discuss how these insights also inform future design directions to enhance children's safety on UGC game platforms with three major stakeholders in mind: child players, parents, and game developers.

6.1 Re-approaching Primary Risks Against Children in UGC Games by Comparing and Bridging Parents' and Children's Concerns

As discussed earlier in this paper, current understandings of children's risks in UGC platforms remain fragmented, often shaped by either children's subjective personal experiences or parents' external observations [88, 106]. Therefore, our study has painted a more comprehensive image of children's online safety in these emerging gaming spaces by examining how children and their caregivers jointly approach the primary threats targeting children in these spaces. Although our findings reveal a broad consensus between children and parents around key concerns, including exposure to violence, harassment, scams, and manipulative monetization, our results reveal that these risks are emphasized and prioritized differently **not only across parents-children groups but also across children's age groups** (Fig 3), with divergences most pronounced in the pre-teen years and narrowing somewhat during adolescence. In this section, we unpack two key insights from this comparative analysis, emphasizing the **relational** and **developmental** dimensions of children's safety in UGC ecosystems.

6.1.1 Children's online risks in UGC games must be understood relationally through the lens of both children and caregivers. Prior works have extensively explored varied risks children face in UGC games, including financial exploitation and gambling mechanisms embedded in their game design [48, 88]. However, our study not only reaffirms these identified categories of online risks in UGC games but also adds nuanced insights into how children of different age groups and parents often express convergent concerns while interpreting those concerns through different experiential lenses.

Indeed, our analysis shows that children and their parents navigate risks from different vantage points: children experience risks firsthand through in-game interactions, peer dynamics, and real-time emotions [48, 49, 107], while parents assess them secondhand through payment alerts, behavioral shifts, or platform reputation [16, 38, 88]. By exploring parents' and children's concerns about these risks, we highlight that children's online risks in UGC games are not merely encountered individually but are relationally constructed and emerge from the daily negotiations of trust, control, and mutual understandings between children and their caregivers.

For example, our findings echo prior research describing parents' and children's shared concerns around monetization pressures on children in UGC games [6, 48, 49, 88]. However, while parents mainly describe unauthorized purchases as an online risk for children's financial awareness or self-control, children tend to frame the same risk in terms of peer pressure and social status: they are mocked as "noobs" for wearing default outfits or not owning limited-edition items. Likewise, bullying and harassment are understood as profoundly social and emotional risks by children [40, 58, 67], who describe being "bombarded" by groups, stalked, or excluded for how they look. Parents, by contrast, tend to view these incidents as behavioral problems or failures in content moderation. What stands out developmentally is that children's strongest sensitivity to ridicule, exclusion, and status loss coincides with pre-teen years, when peer acceptance is central, while parents' anxieties intensify as children begin experimenting with independent transactions and more autonomous play.

In this sense, while parents and children both acknowledge and co-experience the same risks targeting children in UGC games, they may still interpret their mechanisms and impacts differently. This pattern is consistent with previous literature about intergenerational differences in online safety [44, 51, 108]. Such differences may potentially be shaped by children's vulnerability to social harm and parents' anxieties about long-term developmental consequences. For instance, one child described the shame of being excluded "just for wearing a pink sweater," while another expressed fear after being asked to share private contact details. These accounts show that emotional and social harms are not peripheral side effects but central to how children experience these online risks in UGC games [7, 67]. Meanwhile, despite being concerned about the same scenarios, many parents may remain unaware of these nuanced, harmful impacts unless explicitly voiced by their children.

These insights align with broader calls in HCI research to treat children's online safety not as a binary status or universal checklist, but as a negotiated outcome embedded within the child's unique social, developmental, and technical context [10, 39]. In this sense, our study particularly highlights how children's online risks in UGC games must be understood **relationally** through the lens of both children and caregivers. Importantly, this relationality should also be *developmental*, which we detail in the next section.

6.1.2 Understanding and protecting children's safety in UGC games must be approached developmentally through more nuanced regulations and strategies beyond age groups. A consistent thread across our findings is that parents' and children's joint navigation of risk

looks different when children are very young, when they are preteens negotiating peer hierarchies, and when they are adolescents with growing autonomy. However, while prior research on child-computer interaction and child development has highlighted such a developmental progression [7, 52, 67], our results of the regression analysis reveal that chronological age may not be an accurate predictor for whether children experience online risks any more or less than those in other age groups. Rather, an important insight from our results is that **how children emphasize and prioritize various emerging risks in UGC games does not follow a straightforward linear trajectory** (Figure 2), echoing earlier work that emphasizes contextual understandings of digital risk [51, 109]. In other words, the risks children face in UGC games do not simply decline or become less visible as children grow older. Instead, as shown in Figure 3, divergent concerns about risks suggest that developmental changes introduce new vulnerabilities rather than simply reducing risks. In fact, such risks often shift in form depending on how socially embedded, emotionally salient, or persistent they are, a pattern observed in prior studies on children's social gaming and emotional well-being online [8, 62, 67, 76].

On the one hand, older children, for instance, are often granted more autonomy within digital platforms. However, that very autonomy increases their exposure to socially complex harms such as manipulation, coercion, or status-based exclusion. In this sense, older children are not necessarily better equipped to manage risk. Instead, their vulnerabilities just manifest differently, shaped by pressures of social acceptance and their evolving digital identity [52, 73].

On the other hand, children's interpretations of harm are also shaped by experience and immersion. How they approach platform threats evolves through participation, peer interaction, and understanding of platform norms [14, 45, 51, 64, 103]. As they get older, they may more readily encounter and recognize complex risks, such as grooming or scam interactions, but may also normalize these behaviors if they are deeply integrated into the gaming culture. This is particularly evident in how pre-teen and adolescent children describe online dating mechanics on Roblox, which parents tend to underestimate or overlook. While parents may dismiss such behavior as deviant or rare, children can experience it as persistent and unavoidable gameplay features.

Therefore, our study supports and extends existing HCI research that emphasizes developmental fluidity over fixed-age models of children's online risk. Prior work has shown that children's understanding of threats, privacy, and digital consequences is heavily influenced by their lived experiences, rather than just their age group [45, 51]. Our results reinforce this view by showing that risk trajectories diverge across childhood, with some intensifying and some fading. In this sense, although children of various ages may encounter the same types of risks in the same UGC platform, their abilities to recognize, describe, and interpret the same risk can be significantly different. Parents, meanwhile, may assume that older children are more self-regulating, when in fact the nature of their risk has **shifted but not reduced or disappeared in a linear pattern.**

These results further highlight the need to move away from safety models that presume uniform thresholds of resilience or readiness based solely on age. While UGC platforms like Roblox often rely on binary classification systems (such as under-13 versus 13 and older) to regulate children's access to specific gaming features, our work indicates that only depending on this framework may oversimplify the depth and complexities of online risks that children of different age groups may face. We thus argue that **UGC platforms cannot rely solely on chronological age as the basis for structuring children's experiences online** (e.g., adding more parental control features for younger players and fewer for older players). Doing so obscures the wide variability in children's needs, literacies, and vulnerabilities [14, 64, 103]. Additionally, it may risk overlooking how older children, while more digitally fluent, may be more deeply influenced by platform cultures that normalize or even reward risky behavior. By understanding children's online risks in new spaces, such as UGC games, as developmental and situational constructs rather than age-bound ones, we may be able to establish a more accurate and ethical approach to evaluating children's safety and well-being in these environments.

6.2 Designing Safe and Trustworthy Future UGC Game Platforms for Children

Built upon our insights into the **relational** and **developmental** dimensions of children's safety in UGC ecosystems, we offer design recommendations aimed at advancing trust and safety initiatives on UGC platforms by taking three stakeholder groups representing distinct but interconnected layers of children's online play into consideration: *child players*, *their parents*, and *platform developers*. This stakeholder-based framing recognizes that effective safety design must be situated within the real-world contexts where risks are experienced, mediated, and managed. While the specific challenges and responsibilities of each group differ, together they shape the broader ecosystem for designing, implementing, and sustaining safer, more trustworthy UGC platforms for children in the future. By structuring our recommendations in this way, we aim to translate our findings into concrete, context-sensitive strategies that address the needs of each group while reinforcing the overall integrity of trust and safety efforts to protect children on UGC platforms.

6.2.1 Children-Focused Recommendations. Children represent a large percentage of users of UGC games, and their safety and well-being must be prioritized [29, 91]. To empower children to navigate risks while fostering creativity and positive social interactions, integrating **digital literacy and safety education** [14, 64, 103] directly into the game could be beneficial. This could include interactive tutorials that teach children to recognize inappropriate content, avoid scams, and report harmful behavior. Children can be caught unaware of inappropriate content or dangerous scenarios like violent games and situations of online dating. Providing resources and education to help them understand these situations and explain the necessary tools can be valuable, especially when a parent cannot monitor their gameplay.

Additionally, **situationally tailored resources**, rather than only age-banded ones, are needed to reflect the developmental fluidity highlighted in our findings. For instance, both parents and children identified scamming and unauthorized purchases as key risks. Yet their framing of these harms can differ: parents emphasize financial awareness, while children tie them to in-game social

status and peer judgment. Design responses must therefore support children not simply because they are "under-13" or "over-13", but because their vulnerabilities shift with context. For example, resources on protecting personal information and navigating peer pressure around in-game purchases should be framed in ways that resonate with children's lived experiences of exclusion, ridicule, or autonomy, especially in the pre-teen years when these tensions peak [52].

Tools for **self-moderation** are also essential, such as customizable privacy settings that allow children to control who can interact with them or view their creations. Simplified reporting and blocking tools, and clear feedback on actions taken, can further empower children to protect themselves. Our results suggest that these tools must also evolve as children's awareness grows: while younger children may trust filters, older children recognize how peers bypass them. Self-moderation features should therefore provide layered controls that scale with children's fluency and give adolescents meaningful evidence that their reports lead to action. Finally, the game platform can **encourage positive play** through reward systems for constructive behavior (e.g., upvoting helpful players) and creative challenges (e.g., in-game events), which can foster a sense of community and reduce toxic behavior.

6.2.2 Parent-Focused Recommendations. As parents play a crucial role in guiding their children's online experiences [23, 25, 105], they require appropriate tools and knowledge to support their children effectively. Furthermore, striking a careful balance is necessary to help parents protect their child's safety in gaming while allowing children to proactively protect themselves (rather than merely relying on their parents) and still enjoy the open, creative nature of UGC games.

In doing so, we first propose **flexible restrictions** for parents, such as limiting in-game monetary spending or disabling chat features. This can help parents tailor the gaming experience to their child's needs, but not just through rigid categories. For example, current age-based monitoring profiles (e.g., Roblox's under-13 filters [47]) appear insufficient to reflect the shifting vulnerabilities of children, as revealed in our findings. Platforms should therefore allow parents to customize controls to reflect not only the child's age but also their developmental stage, social context, and prior play experiences.

Additionally, **parent-focused educational resources** are essential for equipping parents with the knowledge and tools to help their children navigate UGC games safely. These resources could include comprehensive guides explaining the risks and benefits of UGC games, such as the potential for creativity and socialization and the risks of bullying, harassment, and exploitation [48, 88, 107]. These resources should be easily accessible, available in multiple formats (e.g., videos, PDFs, and interactive tutorials), and tailored to different levels of tech-savviness to ensure all parents can benefit. Our results suggest that such resources should also explain how children's concerns change with age (e.g., why adolescents may report moderation gaps more than younger children) so that parents can calibrate their responses accordingly.

Communication tools are equally critical in bridging the gap between parents' and their children's gaming experiences, which ensure their children are protected during gameplay [5, 10, 15, 44]. For instance, in-game notifications could alert parents in real time when their child encounters potentially harmful content or interactions, such as reports of bullying or attempts to move conversations off-platform. These notifications could include actionable steps, such as reviewing the incident with their child or adjusting privacy settings. Furthermore, features that enable **parent-child collaboration**, such as co-creating games, playing together, or reviewing each other's creations, can foster shared experiences and provide opportunities for guidance [11, 89, 94, 98]. By emphasizing shared navigation rather than surveillance alone, these tools can reduce mistrust and misalignment that often emerge during adolescence shown in our findings, where children withhold disclosures and parents default to overgeneralized restrictions. For example, a "family mode" could allow parents to join their child's game sessions, offering a safe space for bonding while modeling positive online behavior.

6.2.3 Developer-Focused Recommendations. Another key stakeholder in children's online safety is the developers of UGC platforms, who are ultimately responsible for creating safe and inclusive environments for child players. Based on our findings, we propose that game developers should take a *multi-faceted approach* that addresses UGC games' technical and social dimensions.

First, **developmentally responsive design**, rather than strictly age-gated design, is critical to ensure that child players are not exposed to inappropriate materials. Our results show that the online risks children face in UGC games do not decline linearly with age. For example, concerns about moderation failures and bullying intensify in adolescence, even as risks like personal information leaks decrease. Therefore, developers must design protections that reflect shifting vulnerabilities rather than treating children under 13 as a uniform category. As such, content warnings, consent prompts, or contextual nudges could become more prominent during pre-teen years when peer exclusion and ridicule are especially salient, while adolescent-focused interventions could emphasize tools for managing harassment and moderation gaps [51, 109]. By recognizing that children's safety needs evolve dynamically within the same platform, this approach moves beyond simple "kids-only" versus "adult-only" restrictions.

Second, beyond technical solutions, developers must focus on **community building** and support to foster a positive and inclusive gaming culture. This begins with clearer communication and stronger enforcement of community guidelines, such as zero-tolerance policies against bullying, hate speech, and exploitation. These guidelines should be prominently displayed and reinforced through in-game reminders or tutorials [84]. Such initiatives should also be developmentally sensitive, which offer younger players scaffolded opportunities to learn community norms while enabling adolescents to take on greater responsibility in peer moderation.

Third, **transparency and accountability** are key to building trust with players of UGC games and parents. Developers should publish regular safety reports that detail moderation efforts, including the number of flagged content items, actions taken, and improvements made. These reports should be accessible and easy to understand for parents and children, providing transparent insights into how the platform addresses risks against children. Additionally,

feedback mechanisms, such as in-game surveys or dedicated reporting channels, should allow players and parents to report issues, suggest improvements, and receive updates on how their feedback is being addressed. Further, such transparency efforts should also explicitly communicate how protections evolve across developmental stages, which can help parents and children understand why certain interventions differ at different points in a child's play journey.

Ultimately, these stakeholder-focused recommendations point toward the importance of platform responsibility and long-term strategic planning for achieving safer and more trustworthy UGC platforms for children in the future. UGC game platforms should keep these major stakeholders in mind and actively assume responsibility for facilitating collaboration among them, as well as supporting design directions that balance protection, participation, and creativity. By embedding these relational and developmental considerations into platform-wide policies and design processes, UGC environments can evolve into safer, more inclusive spaces that empower all players, especially children, to engage in creative gameplay with confidence and care.

6.3 Limitations and Future Work

First, our analysis is based on reviews obtained from Common Sense Media. While this dataset yielded unique and insightful findings, it is limited in scope due to its exclusive use of English-language content and self-selection, self-report biases. Future work should incorporate multiple data sources targeting more diverse global audiences to obtain a more balanced perspective on UGC game-related risks against children. Our study primarily focuses on Roblox. While Roblox is one of the most influential UGC platforms, other UGC platforms such as Minecraft [90] and LEGO Worlds [35] also attract substantial numbers of children and adolescents. Investigating multiple UGC platforms would allow for a broader assessment of safety risks and offer cross-platform insights into common and platform-specific challenges in protecting child players.

Furthermore, while our content analysis yielded rich quantitative and qualitative insights into explaining how parents and children indeed express and describe similar concerns about risks children face in UGC games, we mainly used quantitative measures (i.e., frequency of mentions) to reveal overall age-related patterns, i.e., how parents and children may emphasize certain risks over others across child players' age groups. This can limit our ability to explain why such perceptual differences exist. Additionally, although several chi-square analyses yielded statistically significant results, the associated effect sizes (Cramer's V) were small. Future work with larger, more balanced samples, complemented by qualitative approaches such as interviews with parents and children, could help determine whether these patterns reflect consistent or context-specific trends.

Finally, our statistical analyses were exploratory. As our goal was to surface broad patterns rather than test theory-driven predictions, we did not begin with predefined hypotheses due to the lack of previous studies regarding our research questions. For example, there may be many alternative statistical approaches to explore potential non-linear trends in our data beyond focusing on age groups, such as theory-informed modeling or mixed-method analyses to further unpack developmental and contextual dynamics. Therefore, our chi-square and regression tests should be interpreted with this exploratory nature in mind. Built on our exploratory findings, future work could adopt more nuanced statistical approaches to develop and test theory-informed hypotheses or risk models to systematically examine how children's online risks vary across developmental stages.

7 Conclusion

In this work, we have explored the emerging risks children face in UGC games like Roblox by examining the concerns of both parents and children across children's age groups. Our findings not only confirm existing research on risks in UGC games but also highlight how these risks are often reported and emphasized in varied ways by parents and children across children's developmental stages, which do not follow a straightforward linear trajectory. These results challenge the binary age categories that dominate current safety features and call for more developmentally responsive and context-sensitive approaches to protect children on UGC platforms. Our work also highlights that children's online risks must be understood not only individually but also relationally through the shifting negotiations of trust, autonomy, and safety between children and their caregivers as they grow. Building on these insights, we propose design recommendations for children, parents, and developers to advance trust and safety initiatives on UGC platforms, mitigating harms while preserving the creative and social benefits for children across all ages. In doing so, we hope to inform the design of safer and more trustworthy UGC platforms in the future, empower families to navigate digital risks collaboratively, and contribute to a broader understanding of how emerging technologies can support children's development while safeguarding their well-being.

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