Harmful Design in User-Generated Games and its Ethical and Governance Challenges: An Investigation of Design Co-Ideation of Game Creators on Roblox

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An increasing number of game platforms, such as Roblox, enable game creators to develop user-generated games (UGGs). Yet, these platforms often come under scrutiny for hosting UGGs that contain harmful content, ranging from sexually explicit material to Nazi-themed roleplay. Limited attention has been paid to how harmful UGGs are ideated by game creators. To address this question, we studied an online Roblox creator community, where Roblox creators collectively engage in design ideation to brainstorm design ideas for UGGs. Through an inductive thematic analysis, we found three primary ways where Roblox creators' design ideation becomes risky, including how Roblox creators generate risky game design ideas, navigate through policy boundaries to develop these ideas, and share strategies of bypassing moderation. Based on our findings, we discuss ethical and governance challenges facing user-generated games. We propose design implications to support game creators in developing ethical game design ideas and safe game designs.

CCS Concepts: • **Human-centered computing** → Human computer interaction (HCI) → Empirical studies in HCI

KEYWORDS: User-Generated Game, Game Design, Game Design Ethics, Design Ideation

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1 Introduction

User-generated game (UGG) is a category of user-generated content (UGC) primarily created by amateur game creators using platforms provided by game companies. Platforms like Minecraft [127], Roblox [128], and RecRoom [129] empower game creators to design, develop, and share their game content, which can range from simple interactions to complex game scenarios. For instance, Roblox [130], operated by the Roblox Corporation, enables its creators to create games, avatar models, and accessories. Roblox has about 40 million UGGs (which Roblox officially calls as 'experiences') featuring a wide variety of game designs, such as obstacle courses (obby), survival, simulation, and first-person shooter games [62]. These games appeal to more than 214 million players monthly, 85% of whom are under the age of 18 [95]. Many believe that the appeal of UGGs lies in their imaginative and inventive game design [3, 13, 131].

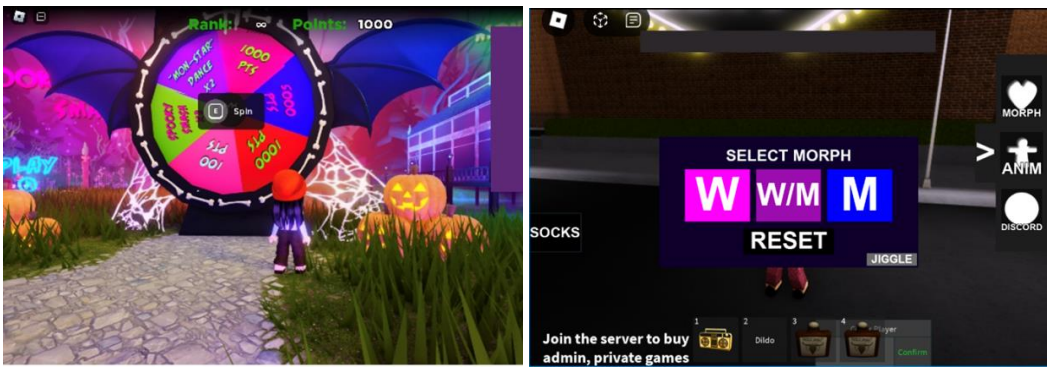


Figure 1. The figure on the left is a screenshot from a game featuring a gambling wheel. In this game, players have the option to withdraw a certain amount of in-game currency to spin the wheel, potentially earning bonuses such as in-game points or items. The figure on the right is a screenshot from a game referred to as the 'condo game.' This game includes sexual animations between players. The 'Morph' option, as shown in the left panel, offers players various nude body types to choose from. Meanwhile, the 'Anim' option on the right panel provides players with sexual animations. Both screenshots were taken by the first author while interacting with Roblox.

This imaginative and inventive approach to game design often begins with 'ideation' [115], a process of generating, developing, and communicating ideas [53], where 'idea' is a basic element of thought that can be implemented to create game designs. The creative ideas stemming from design ideation can be a solid foundation for creating an appealing game design. For example, Jailbreak [25], a UGG on Roblox, offers a unique design for role-playing as a police officer, prisoner, or criminal, garnering more than 5 billion visits since its launch [111]. MeepCity, another UGG on Roblox, features a unique design that creates an open world where players can run virtual businesses and engage in activities like fishing, attracting more than 15 billion visits since its release [68]. Although creative ideas in UGGs can capture broad audience interest and achieve enormous success, UGGs may not always be safe to players, a majority of whom are children under 18. For instance, there has been extensive media coverage on Roblox for hosting UGGs with potentially harmful themes of gambling, slavery, racism, terrorism, and virtual sexual assault, which especially are harmful to child players (see [14, 23, 27, 33, 55, 102, 110]). For example, certain games may incorporate gambling features that prompt players to purchase and enter gambling pools. Additionally, some games depict strip clubs where sexual interactions can occur between players. Figure 1 provides screenshots of potentially harmful

games researchers have encountered in the past. Kou and Gui [59] observed harmful game design patterns in Roblox as designs that can cause adverse effects to players interacting with the platform, and identified several primary design patterns such as ubiquitous microtransaction designs, unconstrained social design, unmoderated expression design, and problematic world design.

Given the prevalence of harmful game designs on UGG platforms and the risks they pose to players, especially child players, there is an urgent need to understand harmful game designs and explore approaches to player safety. Towards this broad goal, it is valuable to investigate the design ideation process that allows game creators to develop ideas for potentially harmful game designs. As such, we pose the research question: **How does UGG creators' game design ideation lead to potentially harmful game designs?**

Importantly, the notions and boundaries of 'harm' and 'harmful' can vary significantly across different cultural contexts [104]. Standards around what constitutes harm to children and child protection in the U.S. have evolved drastically over a generation [83]. In addition, the actual effect of a given design can vary from people to people. Thus, we use the term 'potentially harmful,' instead of 'harmful,' to both recognize the possibility that a design can have adverse effects on players, as well as acknowledge that harm is not a binary construct, and has ambiguous boundaries around whether the harm is effectual.

To answer the research question, we selected Roblox as our study site due to its popularity among all UGG platforms. Roblox has 214 million monthly active users across 180 countries and a community of 9.6 million Roblox creators (RCs) [29]. We collected and analyzed the online discussions of UGG creators about game design ideas on the 'r/Robloxgamedev' subreddit from September 2019 to August 2022 and conducted an inductive thematic analysis [22] of the data to explore discussions among game creators, revealing how their online game design ideation contains risky game design ideas. 'Risky' is a term usually to describe 'behavior.' Risky behavior is an action that may result in exposure to potential harm [84]. For example, online risky behavior can be sharing embarrassing photos [16], public sharing current locations [16], and engaging in sexual online interactions with strangers [7, 16]. Besides conducting risky behavior online, online content can further promote risky behavior in real life, such as anorexic [81]. In this paper, our focus does not stem from the risky behavior of players. Instead, our focus lies on risky ideas or elements that, if utilized by UGG creators, could potentially lead to harmful game designs. These harmful game designs can further lead to potential harm to players or enable players' risky behavior.

Specifically, our findings revealed that creators actively generate risky game design ideas, either inspired by existing game designs or through the brainstorming process. They navigate the boundaries of policy, developing ideas that may cross these boundaries. Additionally, creators share strategies that facilitate the implementation of risky game design ideas, unblocking the constraints of idea development. We use 'design co-ideation' to refer to how game creators collectively develop and exchange ideas. We discuss the ethical dimension in the design co-ideation process and its potential to lead to harmful game design in UGG. We also discuss the governance challenges faced by UGG platforms that may lead to potentially harmful game designs. Furthermore, we propose design implications for incorporating design ethics in the game design ideation and overcoming governance challenges.

Our contributions to the human-computer interaction (HCI) and game research community are multi-fold: First, we provide insights into the role of design co-ideation in creating potentially harmful game designs in UGGs. Second, we highlight governance challenges in UGG platform that impact design co-ideation and, consequently, game design. Third, we suggest

design implications to support ethical considerations in design co-ideation process and mitigate the creation of harmful game designs by addressing the ethical issues in the game design ideas in the first place.

2 Background

Roblox is a user-generated game (UGG) platform that effectively captures the hearts of child players worldwide [19]. As of February 2023, it has nearly 214 million monthly active users across 180 countries, with 75% of them being under the age of 18, and over 50% under the age of 13 [95]. The platform's appeal to such a vast number of players may stem from its wide range of player experiences in more than 40 million UGGs [95] (refer to Figure 2 for examples). Each UGG operates independently, allowing players to engage through their customized avatars. Beyond mere gameplay, upon entering a game, players can also interact with others by text chat, enhancing the overall experience and fostering a sense of community.

Roblox creators (RCs) play an important role in generating extensive player experiences in UGGs. As of 2023, there are more than 9.5 million RCs have created UGGs on Roblox [29]. Notably, a significant number of these creators are children [82, 91], including some who are quite young but have created popular UGGs [58]. The large and youthful creator base cannot live without support from both Roblox and the creator community.



Figure 2. The figure on the left is a screenshot for a Roblox game, Adopt Me. Players in the Adopt Me take care of their adopted pets by feeding them food, taking them to shower, and regularly visiting vets. In the screenshot, a Roblox player is at a pizza dining place and holding their pet in their hand because the pet is sleepy and needs rest. The figure on the right is a screenshot for a Roblox game, NHL Blast. Players in NHL Blast can engage in gameplay mimicking activities of players in actual National Hockey League (NHL). In the screenshot, a player is playing a competitive NHL game with other players. Both screenshots were taken by the first author while interacting with Roblox.

The accessibility of the game creation tool and the supportive community of Roblox creators (RCs) play an integral role in game creation. Roblox makes its own tool for game creation, Roblox Studio [132]. In Roblox Studio, RCs use Lua [26] as the primary scripting language. Lua is well-known for its ease of learning and flexible adaptability [26], making it an efficient scripting language for RCs to create their own games. Moreover, there are supportive Lua developer communities offering resources for both novice and advanced programming in Lua. To further aid creators, the official Roblox platform provides an extensive game creation guide [128] and a creator forum [133] where RCs can explore game development questions. Third-party forums, such as Reddit, also have sub-forums for RCs (e.g., [134–136]) to discuss their experiences and questions related to game creation. This combination of a user-friendly

scripting language and robust supportive communities empowers RCs on game creation of Roblox, ranging from simple game creation to more intricate and imaginative ones.

3 Related Work

This project focuses on risky ideas in design ideation that can lead to potentially harmful designs in user-generated games (UGG). To grasp the nature of risky ideas, it is essential to first understand the framework of harm. In this section, we first review the literature related to harm in UGC that has been studied extensively. Following this, we explain the harm in UGG, an emerging type of UGC. Finally, we discuss relevant literature on design ideation and design ethics.

3.1 Harm in User-Generated Content

User-generated content (UGC) includes content in any form of text, data, or action that creators of an online digital system create, publish, and disseminate through individual channels [76, 97]. Social media platforms are among the most common venues for UGC. For example, on Reddit, creators create text-based content [73], while on YouTube, creators produce video-based content [20]. Although platform users appreciate the value that UGC offers, such as access to new and easily understandable knowledge and opportunities for social connection [56], many researchers in HCI have begun to recognize and investigate the harm it can cause [98, 99, 121].

Harm can come directly from the content of UGC, regardless of the form such as through text, videos, or pictures. Harmful content can not only result in conducting harmful behaviors in real life [15] but also bring emotional harm to viewers [98]. Take content on self-harm, one of the most severe harm from social media [98], as an example. Content related to self-harm not only can lead vulnerable individuals to engage in self-harm in real life, but also can cause trauma to users who are exposed to such content [4]. Particularly, young users are in their developmental stage, and thus more prone to experiencing trauma at their age. Many researchers have pointed out that young users, such as children, are more susceptible to being influenced by such harmful content [10, 15, 34, 108, 121], such as experiencing trauma [99] and conducting physical behaviors that have potential to result in physical harm [15]. In addition, compared to adult users, more categories of content are considered inappropriate or even harmful for young users, including but not limited to pro-anorexia and suicide content [4, 10], sexually explicit content [89, 108, 109], and violent content [66].

Besides content, UGC platforms such as social media also bring users together and result in harmful interactions among users themselves, such as harassment [99]. These interactions are particularly damaging to vulnerable populations and result in group trauma, an emotional harm to all people in the group who share similar identities [99]. For example, Black women are easily targeted and harassed by people with racism, misogynoir, ableism, and sexual objectification [99]; LGBTQ+ individuals are receiving harassment not only out of the community, but inside the community due to stereotyping, exclusion from groups, and challenges to expression of identity [119]; and children are easily contacted and harmed by risk perpetrators for interactions such as sexual solicitation [109, 121] and information breaches [2, 121].

Moreover, when users interact with UGC, harm can arise from engaging in certain actions on the platforms. For example, participating in scams which are embedded in the UGC can cause financial harm [98]. Young users are more inclined to engage in risky actions that are harmful to themselves [43], such as posting or sending their personal information. This is because of young users' still-developing cognitive abilities, which hinder their capacity to fully understand

the consequences of their actions and assess risks accurately when engage in certain actions such as nude pictures, sexting, and sharing identity and private data [43, 65, 109]. What is worse, Deslandes et al. [34] have also found that young users may engage in self-harm behaviors for posting attractive content to audiences on self-harm.

While scholars are making efforts to define harm and its categories within in UGC platform such as social media, it is widely accepted that children, as one of the most vulnerable populations, are more susceptible to harm on social media platforms [84, 121]. This includes harm through content, interactions, and behaviors they engage in themselves [65, 98].

In summary, the issue of harm within UGC seems thoroughly explored by academics, including discussions on the harm framework, how harm occurs, and who is harmed. However, this body of research predominantly concentrates on social media platforms, where the content largely consists of text, images, and videos. Content that falls outside these categories tends to be overlooked, along with the potential harm it may entail. Consequently, there is a pressing need to examine content beyond the realms of social media. Our study addresses this gap by focusing on games as a form of content in UGC, thereby broadening the understanding of harm within this context.

3.2 User-Generated Content in Video Games and its Harm

As the concept of UGC gains popularity, the format of the content has expanded beyond UGC's traditional formats of text, video, and images. Video games have emerged as a new format capturing creators' interests, with platforms like Minecraft [77] and Roblox [59] leading the way. Building on the definition of UGC [76, 97], a UGG is a game created, published, and disseminated by game creators in their own individual channels.

The concept of user-generated content within video games is not new. Decades years ago, video games started incorporating user-generated content to an extent. For example, modifications, or 'mods,' are fan-made changes to a video game that range in complexity from simple gameplay or variable adjustments to 'total conversions' where the entire game is redesigned [86], such as a new level of maps, new characters, and new weapons [87]. These changes diversify player experiences and provide insights into trends for game companies [112, 113, 120]. Because of numerous successful mods in the early 2000s, there was a surge in games wholly dedicated to encouraging creative content based on user-generated games, such as 'Little Big Planet' [24, 94]. However, it was 'Minecraft' that truly heralded the era of UGGs, emphasizing player-driven creativity [21]. While 'Little Big Planet' has attracted a good number of players since its release (12 million players as of 2020, the most updated information available online) [69], Minecraft has drawn in more than 200 million players concurrently [103]. Another significant milestone in this journey was the launch of Roblox in 2006. Gaining remarkable traction in the 2010s, Roblox democratized game development, especially appealing to younger audiences [74]. A notable key step was reached when game companies began releasing editor versions (also known as studios) separate from the end-user versions for game design. As a statement of Roblox, "enabling creation of anything, anywhere, by anyone" [114], with a user-friendly and straightforward interface, these editors enable users with little or no programming knowledge to design their own games [31], which blur the line between players and 'game creators.' This approach is also evident in later user-generated game platforms like RecRoom and Fortnite Creative. The history from mods to UGG demonstrates the evolving relationship between creators and game development.

While user-generated content in video games can offer a wide range of gaming experiences, potentially leading to enjoyment and positive experiences for players, recent studies have highlighted the presence of harmful designs within such content. For example, Kretzschmar and Stanfill [60] found some mods may cause emotional harm to players. In GTA5, there are rape mods that can simulate rape within video games and body mods that can encourage objectification, both of which negatively impact players' mental wellness and values [60]. Recently, Kou and Gui [59] have found harmful design patterns in UGGs, such as ubiquitous microtransaction design, unconstrained social design, unmoderated expression design, and problematic world design. These harmful design patterns can result in multifaceted harm, such as emotional harm when socializing with others and financial harm by engaging in unwanted microtransactions. Therefore, we define harm in UGG as any adverse effects that players experience when interacting with UGGs, including but not limited to harm in user-generated content in general such as physical harm, emotional harm, relational harm, and financial harm [98]. Although scholars have identified how harmful designs bring multifaced harm to players, the cause of the creation of such designs remains a lack of investigation. This paper aims to bridge this gap in understanding how game design ideas can lead to the creation of potentially harmful game designs.

3.3 Design Ideation and Ethical Game Design

Design ideation is a systematic approach for game designers to generate game design ideas [61, 70]. Design ideation involves the process of creating, refining, and sharing concepts, with the term "idea" referring to the fundamental unit of thoughts that may manifest in visual, tangible, or abstract forms [53]. The design ideation process begins with an understanding of human cognitive processes and culminates in the iterative generation and evaluation of design ideas based on cognitive principles [48]. Based on the groundwork of the human cognitive process, several methods enable designers to generate and assess ideas: they may find inspiration for new designs by engaging with loosely related components or solutions to similar problems, and by adopting different perspectives on the design requirement; designers might also evaluate ideas by subconsciously processing them, or even dismissing some of them during the design ideation stage [48]

Game designers also have a design ideation process to come up with and verify game design ideas. They actively seek information, drawing inspiration from various sources including other games, community discussions, and real-life experiences [70]. After having a solid game design idea in the ideation stage, game designers develop game designs based on the idea. While these processes aid game designers during the ideation stage and foster the generation of diverse game designs, it is imperative to note that without careful ethical standard as a groundwork [93, 137], there is a risk of propagating risky game design ideas, which might result in potentially harmful game design such as dark patterns in game design [125].

Relatedly, a thread of research has looked into game design ethics [1, 90, 105, 123] and proposed frameworks to help game designers frame ethical game design ideas and avoid potentially harmful game design implementations. Game design ethic is a standard that game designers should follow to promote an ethical game environment and gameplay [105]. It includes a wide range of considerations, including the potential impact of game content on players' attitudes and behaviors, the representation of violence and social issues, and the inclusion of diverse and respectful portrayals of different groups [105]. The ethics of game design are not just about avoiding harm but also about actively promoting positive human

values and ethical gameplay. Value-sensitive design (VSD) is "a theoretically grounded approach to the design of technology that accounts for human values in a principled and comprehensive manner throughout the design process" [41]. VSD has been applied to many different field, such as autonomous systems [122], intelligent agents [117], and human-robot interaction [106, 107]. Friedman et al. encourage designers to investigate design problem conceptually, empirically, and technically [41]. To be more specific, researchers usually develop values in different contexts based on VSD (e.g. what is users need when interacting with a Robot [107]), ask users to evaluate technology based on the values (e.g. evaluate a replacement robot against a human caregiver [118]), and explore how technology can be designed to embed values into the specific context (e.g. how to mitigate bias in information access system [101]). This process offers a practical approach to embedding human values, such as autonomy, privacy, and courtesy [42], into the design process [41]. In video game design field, building on VSD, Flanagan and Nissenbaum [37, 38] have proposed a framework, values at play (VAP), calling game designers to discover and identify potential human values in design ideas, then translate these ideas into concrete game designs, and finally verify the values in final game design. This process requires a comprehensive understanding of game design from game designers, including not only the technical aspects such as coding but also the conceptual level at the ideation stage of game design.

Ethical considerations play a crucial role in the ideation stage of game design, ensuring game and gameplay are ethical. However, it remains unclear whether and how the creators of UGG navigate the ethical landscape in their ideation stage. Given the widespread harm observed in UGG, our goal is to explore the ideation processes of game creators that could lead to potentially harmful game designs and to understand the ethical dimension in the design ideation of game creators.

4 Methodology

In this paper, we conducted a qualitative study to understand the design ideation processes that game creators of user-generated games (UGG) engaged in, which contains risky game design ideas and discussions that could lead to potentially harmful game design in UGGs. We investigated a game creators' forum of Roblox creators, 'r/Robloxgamedev' subreddit. This section illustrates data collection and data analysis as two steps. Following these, we also state our positionality and ethical considerations in conducting this study.

4.1 Data Collection

This research was initiated by our interest in harmful game designs on UGG platforms. Our primary objective was to explore the design ideation that game creators have which can lead to potentially harmful game design. To achieve this, we directed our focus toward the analysis of online discussions, specifically examining the exchange of ideas and knowledge that can influence the ideas within game creators' communities. We chose this approach over other data collection methodologies, such as interviews, due to a potential risk of 'harm inflation' [47] inherent in participants' subjective perceptions on the definition of harm. Online forums provide more direct evidence related to harm identified in existing literature. Additionally, these platforms are rich sources of ongoing discussions among game creators, often including valuable exchanges of information regarding their creative ideas in design ideation. Bearing these factors in mind, we selected Roblox, a leading UGG platform, as the study site of our investigation. To delve deeper into the design ideation that game creators share within their

community, we chose to analyze online discussions from the 'r/Robloxgamedev' subreddit, a community of Roblox creators (RCs). This online community, which had over 102,000 members as of January 2023, records extensive discussions of RCs on design ideation and thus provides sufficient data for our analysis. We also explored other RC communities, such as the Roblox Developer Forum, but they did not have a clear policy for research purposes by the time we did the study, like providing their API for such use. Reddit has a policy [138] that allowed us to collect data from its API for research purposes and thus we chose it for this study.

We collected three years of raw data from the 'r/Robloxgamedev' subreddit, spanning from September 1, 2019, to August 31, 2022, and then we sorted the data based on the number of threads in the post, from high to low. After that, we screened the raw data by keywords through the list. In this paper, our attention is centered on the discussions of design ideation that are related to risky design ideas and harmful game designs. Given that Roblox primarily attracts younger audiences, the harm in harmful game design should be considered for children as well, as children are part of the players. Therefore, with this focus on harm, we generated the preliminary list of keywords to include what can be considered as harm (the first column in Table 1). We chose these keywords from the literature on general online harm from the HCI field [98], harm in the user-generated virtual world [59], harm towards children [65], and also relevant media reports on harm in Roblox [32:6, 72, 100, 126]. We also added all the variations of each keyword when we screened the data (i.e. die and death, scam and scammer, not appropriate and inappropriate) to ensure the completeness of the research result. In addition, to include more contextual and spoken keywords that people often use in harmful game design discussions, we reviewed 30 threads and their related comments. Two researchers screened the data not only based on the words in the harm mentioned by previous literature and media reports, but also the meaning of the definitions. This step helped us to identify some additional keywords that are regularly used in the RC community (shown in the second column of Table 1). As we delved into each thread in the rest of the raw data, we marked relevant quotes and initial codes along the process, and the search expanded to incorporate additional keywords. We noted these keywords in the last column of Table 1. This iterative process continued until we reached data saturation, at which point no new insights emerged [12]. Overall, we analyzed 2,900 threads with 61,510 comments.

Table 1. Keywords in data collection

Preliminary list	New keywords in initial round	New keywords in all rounds
"Robux," "violent," "nude," "terrorists," "sex," "discriminatory," "money," "profanity," "illegal," "gambling," "suicide," "advertisement," "cheating," "scam," "pay," "donations," "buy."	"Nazi," "armband," "soldiers," "boob," "cum," "virus," "evil," "titties," "die," "gun," "knifes," "trolling," "free models," "malicious," "robbery," "strip club," "WWI," "WWII," "war," "army."	"horrific," "blood," "body," "humanity," "kill," "head," "penis," "dildo," "9/11," "UTG," "school shooting," "scary," "cash grab," "game pass," "mature," "school," "location," "guts," "limbs," "nuclear," "burning." "appropriate"

4.2 Data Analysis

We conducted an inductive thematic analysis of the collected data [22]. Two researchers participated in the data analysis process. Based on the research question of what design ideation

game creators share that is related to harmful game design, researchers first familiarized themselves with the quotes by going through all the quotes. Second, they marked down the initial codes by identifying and labeling interesting statements. Third, they met to discuss potentially higher-level codes and themes until a coherent thematic map is reached [17]. Researchers then went back to all quotes and reviewed the themes to check the coherence and relevance to RQ. Finally, researchers discussed and finalized the names of the themes and subthemes. Giving an example of the procedures of analyzing a code into high-level codes and themes, the quote 'You can have blood in your game, but if you want to have guts and limbs, you'll have to go underground. There are strip clubs and Nazi roleplay games underground' was coded as "community suggests RCs to go 'underground' to bypass moderation." Later, it was grouped into a second-level theme 'strategies of bypassing moderation' under the higher-level theme 'sharing strategies of implementation of risky game design ideas.' As a result, we have 105 initial codes and two high-level themes. Overall, we found that 1) game creators generate risky game design ideas and 2) game creators share strategies to implement risky game design ideas. These themes explain how risky game design ideas evolve in the design ideation processes of game creators, which potentially result in harmful game designs.

4.3 Researcher Positionality Statement

In this section, we elucidate our positionality [8] within the context of this study. All four researchers play video games and have conducted research on video games. These experiences enabled us to immediately understand Roblox gameplay mechanisms and related discussions through reading the data. The first and last authors are the coders who analyzed and interpreted the data. Both of them have conducted ethnographic research on Roblox, immersing themselves in UGGs on Roblox, Roblox-related news and videos, and online communities formed by either Roblox players or developers. Therefore, these immersive experiences enabled the two authors to acquire insider knowledge about Roblox community norms and jargons. For example, 'condo game' is a term mentioned frequently in the community to describe games with sexual roleplay, a term not explicitly explained in many places such as news or the official Roblox website. The authors were only able to understand the meaning behind the term by delving into the community discussions and personally trying these games in 'secret' ways, such as joining private Discord servers. The first author also has experience in game development in Unity and Roblox Studio in her ethnographic research. These experiences enabled the first author to interpret terms used in Roblox game design. For example, the term 'material' in game design describes substances that constitute objects in game, simulating the physical properties of real-world objects. This term is regularly used by Roblox creators in Roblox creator's online forum. Researchers' positionality can be shaped by their background and is connected to their subjectivity. This subjectivity is unavoidable in the qualitative study since researchers' positionality can shift over time based on researchers' updating background [49]. The subjectivity is also the key when conducting the thematic analysis since the coding process of the thematic analysis stems from researchers' in-depth engagement with the data and is situated in researchers' reflexive interpretation [18]. Take the quote, "I tested my game design on another account. It turns out it didn't give a warning," as an example. We see Roblox creators' potential misuse of registering another account for testing potentially harmful game designs. However, we also recognize that researchers from different backgrounds may interpret the quote differently and attribute the fault to the game company for allowing users to register multiple accounts for testing potentially harmful game designs. Regardless of the subjectivity,

all the researchers, while collecting, interpreting, and presenting the data, aimed to achieve 'empathetic neutrality' to avoid any obvious, conscious, and systematic bias [49]. For example, we conducted an inductive thematic analysis instead of a deductive one to avoid potential bias coming from researchers' pre-defined theories or frameworks.

4.4 Ethical Considerations

This research was approved by the university's IRB office before the data collection, in which we stated we would collect data from social media, such as Reddit. Our original study goal was to reveal the design ideation processes that unfold in the online community of UGG creators, without considering the creator's age as a variable. In addition, the subreddit under study is an anonymous online forum, offering no reliable way to know a user's age. However, given that Reddit [139] allows registered users aged 13 or older, it is possible that our data includes quotes from Roblox creators aged 13-17. Thus, the inadvertent inclusion of quotes from this age group suggests a need to discuss its ethical implications [92]. Regarding this, we lay out several ethical considerations. First, while scholars have raised ethical concerns about studies that use online data to avoid ethics approval and parental consent [6], our project is not to achieve this purpose [92]. We view online data as a productive source to answer specific research questions. In this study, the online data provided an ideal site for addressing the question of describing design ideation processes mediated by an online community. This study belongs to a larger project, where later studies can build upon this study to directly solicit experiences and perceptions from child creators and their parents, with ethics approval and parental consent. We have also obtained additional IRB approval for conducting these follow-up studies. Second, to safeguard privacy and confidentiality [35, 39], and prevent potential reposting abuse concerning all Roblox creators, particularly child game creators, all quotes have been paraphrased to reduce searchability. This process enables us to protect each human being, including child creators, even if the data was available online at the time when we collected the data [35]. Lastly, we have made efforts to maintain a neutral, impartial, unbiased, and culturally sensitive tone when interpreting the quotes derived from subreddit discussions.

5 Findings

Our research identified three distinct discussion topics among Roblox creators (RCs) that play a significant role in the generation and development of risky design ideas, potentially leading to harmful game designs. Firstly, we observed that creators actively produce risky game design ideas and explore the limits of policies, developing ideas that may breach these boundaries. Secondly, creators exchange strategies that facilitate the implementation of risky design ideas, unblocking the restrictions on generating risky game design ideas.

5.1 Generating Risky Game Design Ideas

In this section, we found that creators have ways to generate risky game design ideas, not only from the brainstorming process, but also based on game designs that are posted in the online community.

5.1.1 Repurposing Innocuous Game Design

In the Roblox Creator (RC) community, RCs share game elements they designed and seek feedback from the community. Game elements, which can be either concrete or abstract, serve as foundational components in the development of a playable game design. While RCs may

share their game element designs and seek feedback for a good purpose of improving the designs, we have observed that some RCs may repurpose these game elements such as 'material' in risky ways. The term 'material' refers to the substances that constitute objects in game, simulating the physical properties of real-world objects. For instance, a box (i.e., object) with 'wood' material implies that the box is made of wood, and if knocked upon, it would produce a sound akin to real wood. RCs discussed how materials in a game can be used in ways that are risky:

> *"Lawful: It is a good material to create noodle arms; Neutral: It is a good material to create full body jiggle; Chaotic Evil: It is a good material to create titties."*

This comment was under a post where an RC posted a 'soft body' material they created, which enables flexible movements of the object. An RC in the online community commented that although it can be used to create 'noodle arm,' it also has potential for misuse in sexually explicit games (i.e., 'titties'). This misuse of material could potentially contribute to the creation of harmful models. A 'model' is a game element that visually represents an object or character within the game. Models of mature content may be harmful since mature content could reinforce gender stereotypes affecting how players view themselves and others in real life, leading to the internalization of the stereotype [54, 64, 80]. In addition, it may further affect child players' attitudes towards adult sexual behaviors and beliefs to adopt them when child players do not fully understand them [40, 50]. In this instance, the RC who created the material did not anticipate its risky usage on models of mature content, but other RCs in the community identified this usage and suggested the risky game design ideas for it.

Similarly, models themselves, while innocuous in nature, can be utilized in risky ways. For example, RCs envisioned applications for a model of a nuclear power station control room:

> *RC1: "I made a control room for nuclear power station."*
> *RC2: "Based on this room, can we make a Chernobyl 2.0?"*
> *RC3: "It is the mutation time!"*

In the above case, RC1 created a game element, a model of a nuclear power station control room. This room can be used to build a game environment that contains this model. The game environment is a game element for the general environment of the game setting where the gameplay takes place. RC2 proposed that, based on this model of control room, RC1 could develop a game environment that simulates the Chernobyl station. RC3 further suggested that based on this Chernobyl station environment, RC1 could incorporate a nuclear disaster scenario, leading to mutations in nature that simulate the aftereffects of Chernobyl disaster. The Chernobyl disaster was a catastrophic nuclear accident that occurred in 1986 at the Chernobyl Nuclear Power Plant, leading to widespread environmental contamination, long-term health issues, and significant social and economic disruption [140]. The proposed game environment simulates real-life disasters (e.g., Chernobyl disasters) and their consequences. Such mimicry could be harmful since it might be distressing to and could traumatize individuals who have experienced similar experiences [11, 96]. Although the model of the control room itself may be harmless, the ideas for its use (e.g., simulating the Chernobyl disaster and its consequences) can be risky and lead to potential harm to players.

Beyond game environments, RCs also conceptualized risky gameplay, another type of game element that represents how players play the game:

> *RC1: "My friend and I created a 1:1 World Trade Center on Roblox."*
> *RC2: "Oh my god. I would like to play if you have an airplane mode."*
> *RC3: "Then planes go down and make the explosion!"*

RC4: "Then you can make the two buildings collapse when the plane crash on it and make a destruction mechanic with debris all over the place."

In this example, RC1 created a game environment centered around the World Trade Center. While RC1 did not specify the intended gameplay for this environment, other RCs collaborated to propose designs on gameplay featuring an airplane mode. In this mode, players could pilot a plane to crash into the building, resulting in an explosion. This gameplay disturbingly simulates the tragic events of the 9/11 attacks, where two airplanes crashed into the Twin Towers of the World Trade Center in New York City, causing both towers to collapse and resulting in nearly 3,000 fatalities [141]. Although the game environment of World Trade Center might be considered innocuous on its own, the gameplay conceptualized by the RCs could recreate a real-life mass crime within a virtual setting. Similar to simulation of Chernobyl disaster, such simulation may result in anxiety and traumatize players in the game, for both who drives the plane and who see the crash in the game.

5.1.2 Direct Proposing Risky Game Design Ideas

Besides proposing based on game elements, RCs also directly propose risky game design ideas. For example, some RCs suggested:

RC1: "How about a porn film studio"
RC2: "Big booty female"
RC3: "I don't know, maybe a strip club?"

The conversations above arose when an RC sought game design ideas for potential game elements, such as models and game environments. In the conversation, some RCs in the community suggested risky game design ideas on risky game environments, such as a strip club and a porn film studio. Although there was no detailed description of such a game environment, the proposed environment is harmful as it contains mature content. In addition, it could imply further harmful game elements, such as sex-related gameplay that can take place in such environments. RC2 provided an even more detailed design idea of the model, a female with big 'boobs,' offering more practical implementations of the risky idea. Such implementation of the idea can be harmful as it contains mature content of a sexually explicit female body model. What is worse is that RCs not only provided risky design ideas on game elements but also directly supplied game elements that can facilitate the implementation of risky game design ideas:

"I am selling my terrorist game. The main game includes rob-able bank and jewelry store, staff area with guns and uniforms, working police cars, guns store, bombs store, and government office. All the models are fully functioning."

This RC proposed a game design idea for a terrorist-themed game, which, if realized, could be harmful by spreading extremist ideologies and desensitizing players, especially child players [71, 75, 116]. To facilitate the implementation of this game design idea, the RC even provided a set of risky models for creating game environment themed around terrorism, featuring harmful gameplay such as bank robberies, purchasing bombs, and engaging in gunfights with the police. The public availability of these models could reduce the cost of implementing risky game design ideas and thus facilitate creating harmful game design based on the ideas.

5.1.3 Navigating Boundaries of Policy in Discussion

Discussing with other game creators in the community serves as an integral part of the design ideation phase, providing a platform for creators to receive feedback and refine their ideas

through information exchanges. However, this feedback does not always drive the ideation process in a harmless direction. For example, Roblox policy clearly outlines certain harm that game creators are advised to steer clear of in their game designs. However, RCs in community engage in conversations to explore the limits of what is considered harmful according to Roblox policy, thereby fostering the development of risky game design ideas based on these navigations. For instance:

> *RC1: "I made a draft of realistic body model. How do you think?"*
> *RC2: "You have a good idea. But be careful since Roblox may not be very happy with human breasts even though your model is realistic."*
> *RC3: "I would recommend you reduce the size of the breasts and making it very small. I don't think Roblox would be happy with human breasts like this…"*
> *RC4: "Who said your model was cursed? These look great!"*

Within Roblox, the avatar model often involves the use of 'blocks' (e.g., a head would look like a block instead of a fluent realistic shape). In the above case, RC1 proposed an avatar model design idea on a paper draft that had a realistic appearance, which received commendations from certain community members, such as RC2 and RC4. However, such design ideas may also lead to complex evaluation of potential harm, particularly when the implementation of the idea hovers at the boundary of harm. Therefore, RCs may be uncertain about the precise demarcation of this boundary. For example, RC3 raised concerns about the avatar draft for its exaggerated features, like disproportionately large breasts. If the draft is implemented to the actual model in Roblox, it could raise concerns about whether it is counted as mature content that can be harmful and potentially violate Roblox's policy on sexualized content. The uncertainty of the interpretation of what count as harm in Roblox policy and the discussion involved with both compliments and criticisms may confuse RCs on the boundary of the harm and thus facilitate the implementation and further development of game design ideas in a risky direction. Similarly, RCs had a debated discussion of the policy boundary around the model of blood:

> *RC1: "This is my first time creating a Roblox game. Is my depiction of blood too realistic here according to Roblox's taste on blood?"*
> *RC2: "Well, it does seem somewhat realistic."*
> *RC3: "How can that be realistic? The blood looks flat and square here. Does your blood come out in perfect shapes with clear edges?"*

RC1 created a game environment that includes a blood model (i.e., a model representing blood in the game). Game design elements featuring blood could be risky as they may contribute to violent gameplay, potentially increasing aggressive thoughts and a sense of fear [75]. Moreover, Roblox has a policy for content related to blood or violence, as mentioned by RC1. However, even with the policy, the boundary between acceptable and excessive bloody or violent content is unclear to game creators. When designs or ideas hover at the boundary of such policy, creators engage in discussions to determine if these designs are indeed potentially harmful. While RC2 might view a blood model as acceptable, RC3 points out that this model is flat, square-shaped, and possesses clearly defined edges, which does not realistically mimic actual blood. Such discussions about the boundary of potentially harmful game designs can lead to unclear standards for determining whether a game design is potentially harmful, violates Roblox policy, and results in harm, therefore may facilitate game creators in developing game design ideas in a direction that can result in even harmful game design.

The discussion about unclear boundaries of potentially harmful game designs is not limited to models but can also extend to gameplay. For example:

> *RC1: "I made my new lottery machine. How do you think about it?"*
> *RC2: "Is gambling even allowed in a Roblox game? My friend and I love casinos and I'd love to have a casino-based game."*
> *RC3: "Gambling in games is banned in lots of countries and so are loot crates, so I think the closest thing to gambling allowed in Roblox is eggs or boxes so this probs won't be allowed."*
> *RC1: "I do not see it as gambling as its sill be like a daily bonus in my game. If that is against the rules, any ideas?"*

In the case above, discussions among RCs delved into whether a design can be seen as gambling, a harmful design due to its impact on children's mental health problems and risks of lowering self-esteem and self-confidence [85]. Roblox also has a policy regarding prohibiting gambling mechanisms. However, RCs seem unclear about what constitutes gambling. RC1 introduced a daily bonus lottery machine that grants players random items without the intention of creating a gambling mechanism. However, RC2 and RC3 perceived this feature as a form of gambling, potentially in breach of Roblox policy. Moreover, RC3 cited examples from other games where loot boxes (a consumable virtual item that can be redeemed to receive a randomized selection of virtual items) were banned due to a violation of gambling. This example equates loot boxes to gambling, thereby suggesting that the lottery machine, due to its resemblance to loot box mechanisms, might also be classified as gambling under Roblox policy. Consequently, RC1 began exploring alternative methods for the daily bonus feature. This situation illustrates that there's uncertainty among creators about the precise definitions of terms like 'gambling,' although Roblox policy has explicitly mentioned the term, leading to ambiguous discussions about such grey areas.

The discussion around the policy boundary is further complicated by past instances of moderation related to similar issues in game design:

> *RC1: "Would this get me banned from Roblox?"*
> *RC2: "Not really. It matters if you add really graphical content. (e.g. A lot of Blood, Nudity etc.)"*
> *RC3: "Yes it will. I've been banned multiple times for way less spicy stuff when making an innocent fps."*

According to RCs' understanding of Roblox policy, there's a belief that the policy targets primarily highly explicit content, such as violent content including blood. Yet, what constitutes 'highly' explicit remains vague. Therefore, the judgment of whether a game design is potentially harmful varies from person to person. RC2, for instance, expressed that the design created by RC1 did not violate any boundaries. On the other hand, RC3 reflected on their own experiences with content moderation, where designs they thought were not crossing borderline still are considered explicit and faced moderations. On one side, RC2's support appears to interpret Roblox policy. On the other, the experiences of moderation concerning similar content provide a more concrete indicator of overstepping boundaries. As game creators engage in debates aimed at delineating policy boundaries, their understanding of the boundaries of harm listed in the policy may further be blurred by moderation. In addition, their conceptualization process might prioritize the exploration of these boundaries over the content's inherent qualities. This approach can result in developing game design ideas that, while not explicitly violating Roblox policy, may still be risky or controversial.

5.2 Sharing Strategies to Implement Risky Design Ideas

In game creators' pursuit to navigate policy boundaries rather than focusing on the inherent qualities, game creators engage in sharing and actively seeking strategies to incorporate controversial design ideas into their games (e.g., in the gambling example, RC1 was looking for an alternative approach). The information about such strategies can enable game creators to circumvent moderation restrictions associated with implementing contentious game design concepts. By exchanging information on such strategies, creators effectively bypass the constraints that might otherwise hinder the realization of these ideas, thereby enabling a smoother progression in the development of game designs that might be considered potentially harmful. This process not only challenges the limitations imposed by moderation but also fosters an environment where the ideation and development of controversial game designs are facilitated.

5.2.1 Strategies of Bypassing Moderation

RCs exchange strategies on circumventing moderation based on their previous experiences. For instance, RCs may adjust the game design elements without altering the risky core elements that can be considered harmful game designs:

> *"Alter a single pixel within the design and attempt to upload it again. Making even a minor adjustment will prompt a reevaluation."*
> *"Modifying the blood color to green or blue can reduce the likelihood of it being flagged."*

Roblox employs an automatic moderation system to identify and prevent inappropriate visible game elements from being published, particularly those with explicit graphic content like blood models. Some RCs have recommended subtly changing a few pixels or colors to trick the system, yet these strategies fail to eliminate the visible inappropriate game elements from being published. Such strategies involve tweaking game elements with the intention of spamming the moderation system, enabling games to evade moderation. The strategy affords players to think of risky design ideas as they know the ideas can be implemented and published as long as they find a way to bypass moderation.

Even if the moderation system can detect harmful visual game elements, creators can still devise ways to bypass moderation by eliminating the most explicit visual game elements. For example, an RC suggested removing the most gruesome model:

> *"I suggest considering the removal of elements that might be considered highly gory, such as the chili sauce head."*

The term 'chili sauce head' potentially represents a model of a decapitated head that includes blood. This model, deemed excessively gruesome by this RC, is likely to be moderated by the Roblox moderation system. Thus, removing the 'chili sauce head' model may assist RCs in getting their game past moderation. However, simply removing such elements does not mean addressing all risky game elements in the game. While eliminating overtly explicit visual game elements, such as models, may satisfy automatic moderation requirements, risky game design ideas may still persist in the game environment and gameplay, as our first finding section suggests. Consequently, game creators might still develop and implement risky ideas on game environments and gameplay by removing visually explicit elements.

While some RCs may submit their game designs multiple times in an attempt to spam and bypass moderation, they could face negative consequences for these attempts involving harmful

game elements. Some RCs found strategies to avoid the consequences such as penalties from moderation by using another account:

> *"I tested my game design on another account. It turns out it didn't give a warning."*

The consequences for submitting inappropriate game elements extend beyond the mere failure to publish; they also include account suspension for RCs. To safeguard their primary accounts from such penalties, some RCs opted to test their models on 'throwaway' accounts, which can be abandoned after a few uses, as suggested by the RC. Utilizing throwaway accounts for testing is another method of spamming the moderation system without risking penalties for uploading such risky game design elements on their primary accounts. In addition to avoid penalties of account suspension, another RC provided another strategy for avoiding penalties of financial loss:

> *"Upload it [your design] as a decal. This way, you can ensure it successfully passes through the moderation process before committing to it."*

RCs are required to pay for uploading their model on the creator market. Uploading inappropriate models also results in the penalties of the financial investment made to list them on the Roblox marketplace, with refunds not available if the model is removed. As a protective measure to avoid such penalties, RCs recommend testing their model designs with 'decals' first to see if they can pass Roblox moderation. 'Decals' in Roblox are essentially standard images that can be affixed to various models at no cost, akin to placing stickers on real-world objects. By uploading decals and evaluating the outcomes of moderation, RCs can make informed decisions without incurring the financial expenses associated with uploading complete models. Employing either "throwaway" accounts or decals enables RCs to assess moderation results with minimal loss. However, these approaches, which rely heavily on the automatic moderation system, overlook the potential for undetected risky game elements to reach players, highlighting a critical oversight in addressing deeper issues within the risky game elements.

The strategies outlined previously primarily concentrate on bypassing moderation in visual game elements. In addition to moderation of visual ones, Roblox also tries to moderate gameplay and game environment by looking at the game descriptions and titles. RCs share strategies for circumventing moderation on harmful game play and game environment:

> *RC1: "Blood is okay. But keeping games underground if you want to have elements like strip clubs or Nazi role-playing."*
> *RC2: "That's interesting. I might try to find one. Is there a specific keyword you can search to find them like with sex games or do you just stumble upon them?"*
> *RC3: "I know the keywords for strip club games, but for Nazi RP's you have to have a Discord or stumble upon it."*

Based on the discussion above, it's evident that there are harmful games on Roblox, which are created by RCs who are aware of the harmful nature of their games (e.g., Nazi-role play which may facilitate spreading of Nazi ideology [9] and result in actions toward violence [46]). These games, which include risky environments and gameplay that can bypass automatic moderation on visual game elements, feature non-visual explicit game design elements such as Nazi role-play (i.e., gameplay) and strip clubs (i.e., game environment). From RCs discussion, it seems the only way Roblox employs to detect harmful non-visual explicit game design elements is from keyword detection. To avoid moderation by such detection, RCs can modify the game's

keywords, employing innocuous and random terms in their design to obscure the game from keyword detection. Consequently, directly searching for these harmful non-visual explicit games using specific keywords proves challenging. Nonetheless, players seeking out these harmful games can still find and engage in them by delving deeper by joining associated Discord servers or stumbling upon specific keywords.

Through the above strategies and information, game creators have learned how to bypass moderation of visibly harmful game elements, such as models. They also understand how to bypass moderation based on keywords, which may be used to infer aspects of risky gameplay and the game environment. Consequently, equipped with these strategies, game creators are capable of implementing their risky game design ideas in a format devoid of visually harmful design elements and using innocuous keywords that the system cannot detect based on those keywords alone. These strategies create opportunities for generating and developing risky game design ideas and may encourage such practices within the game creator community.

5.2.2 Information about System Loopholes

In addition to actively exchanging strategies to bypass moderation, discussions about system loopholes inadvertently provide game creators with insights into vulnerabilities that facilitate the implementation of harmful game designs. The information around system loopholes may reveal to game creators' methods for implementing risky design ideas, which can then be leveraged to develop similar harmful game designs. For example, an RC reported a scam model with an in-game purchase prompt:

> *"It's possible that you used a model with a script triggering an 800 Robux admin purchase popup. Once someone made the purchase, they could have fallen victim to a scam, with the funds diverted to the model's creator. It's conceivable that someone reported the game creator as a scammer, ultimately leading to their termination."*

In the case above, an RC incorporated a model into their game that another RC had created, which included a purchase prompt urging players to make a purchase. The RC who utilized the model did not know the existence of the model with the purchase prompt. In addition, the profit from player purchases was directed exclusively to the RC who created the model. Both factors leave the game creator unable to deliver the items players paid for. Consequently, players are harmed financially [98] and might report the game's creator as a scammer. In this situation, the RC who created the model appeared to escape punishment while still profiting. The discussion among RCs revealed a loophole in the system, enabling some RCs to exploit the same loophole in risky ways in the future to create potentially harmful designs.

In addition to the loophole of the scams between model and game, another discussion revolves around Ultimate Trolling GUI (UTG), which primarily intended for a selected few trolling players to engage in exclusive behaviors.

> *RC1: "UTG is an interface that grants admin power to certain trolling players."*
> *RC2: "UTG for sure has commands that are discriminatory in nature."*
> *RC3: "I believe certain UTGs have sex command."*

As RC1 described, UTG is a pop-up window where the exclusive players (e.g., players who made purchases) can choose from many commands from admin interface of what behavior they would like to engage in the game. The behavior is usually considered a privilege in games and sometimes harmful. As RC2 and RC3 reported, some UTGs contain discriminatory and sexual

commands. As such, it may result in uncomfortable interactions such as sexual abuse and even rape, which brings traumatic online experiences and unpleasant aftermath for victim players [51]. The information regarding UTG equips RCs with perspectives on potential exclusive behaviors, some of which could be risky, such as those related to sex or discrimination. Ultimately, this harmful design of UTG may lead to risky game design ideas based on it.

In sum, information about system loopholes is revealed by existing harmful game designs that are not moderated by Roblox. RCs who have access to this information may develop risky game design ideas based on the loophole, thus facilitating more harmful game designs that utilize such loopholes.

6 Discussion

We presented an empirical analysis of Roblox creators (RCs)' game design ideation process for creating user-generated games. This process highlights how creators generate, develop, and discuss risky game design ideas in the online community, which could potentially lead to harmful game designs. Based on the empirical findings, we reflect on the ethical considerations of game creators and the governance challenges faced by user-generated game (UGG) platforms. Both factors play a role in the development of risky ideas and, therefore, warrant further investigation to promote safe game designs. Lastly, we propose design implications for aiding ethical considerations in the design ideation process and for overcoming the governance challenges on UGG platforms.

6.1 Design Co-Ideation and its Ethical Dimension in User-Generated Game

Design ideation is essentially a process of conceptualizing design solutions to open-ended questions through the generation, development, and communication of ideas [48]. While professional game designers tend to have a group of peers to work with, such as a design studio, for the ideation of game design [61, 70], Roblox creators, most of whom are amateur or beginner designers, do not enjoy such resource. Thus, it is unsurprising that the online community has become a valuable place for Roblox creators to exchange design ideas. In addition, while traditional design ideation in a design studio may result in a single design, what we found in the Roblox creator community is a form of collective ideation (or co-ideation) where numerous Roblox creators have the opportunities to participate in numerous design ideation processes. These ideation processes may or may not lead to a final design product. However, such community-based ideation also possesses a generative nature, in the sense that, one creator might discuss and refine their idea by actively seeking feedback from the community, while others may inspire and develop their ideas based on these discussions. This communal approach to the ideation process, which we term design co-ideation, operates at a community-wide level, distinguishing it from traditional design ideation practices.

Our research aligns with previous findings that describe how game designers engage in a variety of activities to generate and develop design ideas. These activities include sourcing information from diverse media such as movies, television shows, and other games, as well as engaging in discussions with peers [48, 61]. Although this process is intended to foster creativity, we have observed that it can lead to the emergence of risky ideas within the design co-ideation process. For example, RCs have sought design suggestions that resulted in proposals for adult-themed game environments and models, such as strip clubs and characters with exaggerated sexual features. One RC created a model of the World Trade Center and sought community feedback, which culminated in the development of an airplane mode gameplay

reminiscent of the 9/11 disasters. This issue may arise because, unlike professional game designers whose game designs, if implemented in popular or commercial video games, may be under close scrutiny from journalism and governmental agencies, game creators may make games that are only visited by tens of or hundreds of players and are rarely challenged by ethical concerns in their game making process. As a result, they might generate ideas that are ethically risky from the very beginning, the design co-ideation process. The discussion in the design co-ideation process can have a more pronounced impact when child game creators are involved. Child game creators may become aware of the fact that platforms like Roblox can host risky game themes. Consequently, they may begin seeking out such games to play or as inspiration for their own creations on Roblox. As children aged between 13-17 are in a critical stage of developing values [28]. These discussions may inadvertently provide a new situation for them to reevaluate and change their value structures [30] in both gameplay and game design to a risky direction, such as normalizing risky design ideas.

During the design co-ideation process, discussions about exploiting policy loopholes and strategies for evading moderation can contribute to the generation of risky game design ideas at the community level. Makri et al. [70] noted that game design oftentimes involves collecting and taking advantage of available information and resources. As a result, RCs might utilize insights about policy loopholes and strategies for bypassing moderation, along with community-generated risky ideas that exploit these strategies and loopholes, to develop similar concepts, such as underground Nazi role-playing games. Furthermore, Hernandez [48] noted that designers often explore ways to challenge stereotypes in design requirements and shift perspectives to foster innovative design ideas. Engagements with the gray areas of policy and its implications might also encourage RCs to reconsider design requirements, moving from compliance with policy to finding ways around it. This shift in perspective could lead to the emergence of risky game design ideas, potentially resulting in the creation of harmful content.

However, this does not imply that professional game developers are exempt from producing risky game design ideas and perhaps unethical ones. Game scholars have long observed ethical issues with game design. Zagal et al. [125] have pointed out the presence of dark patterns in numerous commercial video games, negatively impacting players and highlighting the absence of standards or fundamental principles to guide the ideation process of game designers and creators. Van Rooij et al. [93] proposed that the game industry should consider incorporating behavioral design to support gamers' physical, social, mental, and financial well-being. Meanwhile, game journalism also plays a role in critiquing harmful game designs. For instance, the game Palworld has faced criticism for incorporating a slavery mechanism [5] and promoting unethical gameplay practices, including kidnapping and human trafficking [88]. However, apart from this external scrutiny, the video game industry seems to lack a consensus on ethical design standards. Relatedly, In 2020, game developers began acknowledging ethical concerns within the gaming industry [142] and proposed a code of ethics for game developers [137]. Although this initial effort was applaudable, there has been a noticeable lack of follow-up actions and updates. In a nutshell, what we observed about RCs' lack of ethical engagement in their risky design ideation processes, is consistent with the realm of professional game design.

Various scholars have delved into the realm of design ethics, advocating for the incorporation of values and beliefs into the design process [36, 41, 42]. Particularly, Flanagan et al. [36] suggested that game design should incorporate values such as diversity, justice, inclusion, equality, privacy, gender equity, environmentalism, security, creativity, cooperation, sharing, trust, authorship, and liberty. In the context of Roblox, it is possible that RCs proposing

an airplane mode related to the 9/11 disaster may not have fully considered the implications for values of security or justice. Similarly, RCs proposing adult-themed models may not have taken into account the importance of value of gender equity. Those exploiting model scams may disregard the value of trust, leading to profit at the expense of players. The neglect of these values at beginning of the game design process, that is, the design co-ideation process, can lead to the generation of ethically risky design ideas, which, if realized, could be both harmful and unethical.

To aid game creators in creating ethical game designs incorporated with human values, ethical values can be tailored to game creators, encompassing both general human values [42] and those specific to the gaming context [57, 105]. Flanagan and Nissenbaum [37, 38] have introduced the Values at Play (VAP) framework, which guides the discovery, identification, translation, and verification of values within game design. This framework provides game designers with a structure to ensure the presence and adherence to values in their design ideas and throughout the implementation process. If game creators keep these values in mind and validate the presence of values in game design ideas before their implementation, it could lead to the dismissal of certain risky ideas during the design co-ideation stage. For instance, if RCs critically evaluate the value of creating a strip club, they might recognize the lack of gender equity in such a design and decide against proposing it within the community. Similarly, with the value of justice in mind, RCs might avoid implementing graphically violent content such as blood, thereby sidestepping the need for moderation or attempts to bypass it. With game design values in mind, RCs could generate design ideas that not only comply with policies more naturally but also are more effective in preventing potential harm not explicitly covered by existing policies, rather than seeking ways to circumvent moderation after harmful designs have been implemented.

6.2 Governance Challenges

The issue of risky design ideas and the potential implementation of such ideas do not stem solely from the game creators' lack of ethical consideration. We also believe that certain governance challenges within Roblox contribute to these risky design ideas. Obar and Wildman [78] proposed that the emergence of new technologies invariably prompts discussions about how governance design should adapt to address the issues arising from these technologies. User-Generated Game (UGG) platforms, as an emerging technology, have not been thoroughly examined in terms of governance challenges. Our findings reflected two primary governance challenges on the UGG platform: policymaking and policy enforcement. These challenges highlight the need for a comprehensive approach to governance that addresses the complexities of managing a platform where end-users (game creators) are the primary creators of content.

Policymaking is the first strategy for addressing governance issues in emerging technologies [78]. Scholars have highlighted the difficulties social media platforms face in creating policies for user-generated content [52], which presents challenges for platform governance. Our findings indicate that Roblox also encounters challenges in policymaking. Specifically, there is a lack of clarity in how Roblox communicates its policies[2] to creators, leading to difficulties in policy compliance. It remains uncertain whether the Roblox policy comprehensively covers all forms of harmful content. However, even with the prohibited content explicitly listed in the policy, creators may struggle to understand and adhere to these guidelines. Our analysis traced

[2] This paper references the Roblox policy available as of August 7, 2023 [143], prior to the drafting of this paper.

back to policies that Roblox creators (RCs) reported as unclear, identifying several factors contributing to this lack of clarity. The first issue is the absence of clear definitions within the policy. For example, one RC mentioned creating a lottery machine, believing it did not violate Roblox's policy on gambling. In contrast, other RCs provided evidence suggesting it could be considered gambling, thus potentially violating Roblox's policy. Regarding the policy on gambling, Roblox's position is somewhat ambiguous, allowing "unplayable gambling content and games of luck and chance that are not casino or gambling-based" [143], without clearly defining what constitutes gambling. This ambiguity leaves room for interpretation, resulting in some Roblox creators incorporating elements akin to gambling, such as "lottery machines," into their games.

Roblox policies not only lack clear definitions but also fall short of providing sufficient details. For instance, a debate emerged among Roblox creators (RCs) when one RC created a model featuring blood, leading to discussions on whether this model was considered explicit and in violation of Roblox policy. Upon reviewing Roblox's policies [143], we found no specific reference to the term "blood." The most relevant policy states that Roblox prohibits "Realistic or real-world depictions of extreme gore, graphic violence, or death," which leaves ambiguity around what constitutes a "realistic" depiction of blood. This lack of specificity contributes to uncertainty among creators, making it challenging for them to determine whether their content aligns with Roblox's guidelines on graphic content.

In addition, Roblox policy intertwines guidelines for creators and players, potentially complicating the comprehension and application of the policy. Our research indicates that Roblox creators are often uncertain about what constitutes sexually explicit content. Although the Roblox policy document mentions "sex-related" topics in over ten instances, not all of these references directly relate to game design. For example, one policy specifically prohibits "engaging in sexual conversation with or soliciting sexual material from minors," a rule clearly aimed at regulating player behavior rather than game design. Similar to policies on other user-generated content (UGC) platforms [63, 144, 145], Roblox's policy lists broad content categories such as child sexual exploitation, terrorism, and violence. Although the intertwined guidelines may not necessarily directly result in a blurry understanding of sexually explicit content, this amalgamation of guidelines for both players and creators can lead to confusion and a heavier burden on both groups, which can result in difficulties in understanding the policy in general, as they must sift through regulations that may not be relevant to their specific roles on the platform.

The final challenge in policymaking is that Roblox policies must be accessible and comprehensible to children. Unlike other UGG platforms like Fortnite and Minecraft, which has a significant adult user base, Roblox is predominantly used by children, both as players and creators. Child creators, in particular, may struggle to discern what is appropriate in their designs and thus depend heavily on Roblox's policies for guidance. Any ambiguities in the policy, whether it be unclear definitions, a lack of detail, or the intertwined guidelines for different roles, can exacerbate the challenge of understanding and adhering to these policies. Ensuring that the policies are clear and tailored for a young audience is crucial to support the child creators in navigating the platform responsibly.

Besides policymaking, the second governance challenge is related to the limitations of policy enforcement, or more specifically, the moderation system. In the realm of social media, one of the most prevalent platforms for UGC, scholars have highlighted various challenges that content moderation poses to platform governance [44, 45, 124]. Our research suggests that the

vague nature of policies may lead Roblox creators to rely on their past experiences with moderation to infer what might trigger content moderation, essentially determining boundaries through a process of trial and error. However, moderation systems may not be fully equipped to identify all potentially harmful designs. Previous studies have pointed out the complexity and contextual nature of harm on Roblox, which can be difficult for a moderation system to thoroughly capture [59]. We also observed that some designs, such as "underground" games (e.g., Nazi role-play games), may not be easily detected by moderation. These games might not include visually explicit content like blood or models of female breasts, nor do they necessarily contain harmful keywords that can be flagged. This potential reliance on moderation, coupled with its limitations, might lead creators to believe that as long as their game elements are not moderated, they do not violate Roblox policy, or they are allowed to do so.

6.3 Design Implications for Ethical Design Ideation and Platform Governance

Recognizing the existing governance challenges and the importance of ethical considerations [42] in the game design ideation process, we believe UGG platforms have an opportunity to foster a safer UGG gaming environment for children through several steps. The first step is to refine their policy framework to improve clarity by clearly defining terms, elaborating on the limits with details, and distinguishing between different roles. Considering the substantial number of child players and creators on platforms like Roblox, it is important to clearly articulate restrictions on game design that could be harmful to children in an easily comprehensible manner. By clarifying these policies, game creators will be better informed about the limitations, thereby preventing generating design ideas that might overstep these boundaries.

The next measure for UGG platforms involves introducing game creators with ethical values, both general human values [42] and those specific to the gaming context [57, 105]. The aim of this step is to enhance game creators' ethical awareness. This guidance should be provided to game creators before they enter the design ideation phase, i.e., before they begin generating game design ideas. This approach could help avoid generating risky ideas and the subsequent implementation of harmful game designs. The next step is that during the design ideation phase, UGG platforms could encourage game creators to momentarily reflect and reassess their design ideas. This step aims to help game creators to dismiss some of the design ideas that may not be considered as ethical. Finally, during the implementation of the design ideas, UGG platforms should guide game creators to interactively identify, incorporate, and validate ethical values within their game designs [37, 38], thereby promoting a deeper understanding of game design ethics. This final step aims to help game creators to reevaluate the values iteratively in their design process.

Although the design implications we have outlined above may aid UGC platforms like Roblox in encouraging creators to contemplate ethics and adhere to governance policies, there remains uncertainty regarding how child game creators can assimilate this knowledge. Roblox [146] recommends that children above the age of 10 begin creating, and they acknowledge that some creators may even be younger. The effectiveness of the support provided to these young creators to design games with ethical considerations is questionable. In UGC platforms such as Reddit and YouTube, it is not uncommon for users to be required to meet certain age requirements to register. On the one hand, the limitation can prevent children from getting engaged in risky contact and viewing risky content [79]. On the other hand, it may also prevent children from conducting risky behavior such as creating hateful materials, inciting racism, or

posting or distributing sexual content [67]. Given the intricacies of UGC creation and the ethical and governance challenges it entails, it may be worth reconsidering whether to implement age limits for creators to publish UGCs on such platforms. While we acknowledge and value the creative freedom that UGC platforms offer, there should be a more thoughtful consideration for the responsibility of child game creators to develop games with ethical considerations in mind.

7 Limitations and Future Research

Our research focuses on a specific online community of Roblox creators; therefore, we do not assert that our findings are representative of all game creators across other user-generated game (UGG) platforms such as Minecraft and Rec Room. Moreover, the perspectives gathered from a single Roblox community may reflect biases unique to that group. It is beneficial to extend research to game creators on various platforms and within different communities to validate and broaden our findings. Although we observed that the implementation of risky ideas could result in harmful game designs, it is important to note that some ideas, while proposed by creators, may not be implemented. It is worthwhile to investigate how likely game creators implement the risky ideas. Lastly, we organized our data based on the number of discussion threads, indicating a certain level of discussion popularity within the community. However, the extent to which these discussions about risky design ideas permeate the wider community of game creators remains unclear. Conducting a quantitative study to determine the involvement or exposure of game creators to these discussions would be valuable.

8 Conclusion

In this study, we documented how risky design ideas in the design co-ideation stage can influence the implementation of harmful game designs on the user-generated game (UGG) platform. We conducted a thematic analysis of online discussions within the game creators' community, focusing on the generation, development, and discussion of ideas and related information. Through this analysis, we identified three types of discussions that facilitated the emergence of risky game design ideas: directly generating design ideas, navigating the boundaries of policy and developing ideas within those boundaries, and sharing strategies for designing potentially harmful game which can facilitate developing design ideas that aimed to bypass the moderation. Based on our findings, we introduced the concept of design co-ideation, where game creators collaboratively develop game design ideas. We highlight how this approach to design co-ideation, combined with the challenges of platform governance, can lead to the development of risky game design ideas that may result in potentially harmful game designs. We suggest implementations for game platforms to further support ethical considerations in game design and to address governance challenges. Looking forward, further research could explore additional UGG platforms and discussions from game creators to investigate how harm can evolve beyond mere game design ideas across different platforms.

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