

Can the Metaverse Be Good for Youth Mental Health?

Youth-Centered Strategies for Ensuring and Enhancing the Mental Health and Safety of Young People in the Metaverse

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Introduction

Nearly every young person spends a large part of their life in online spaces. On social media platforms, in digital games, and in augmented-, virtual-, and mixed-reality environments, they are exposed to a vast range of content with unlimited opportunity to engage with other users. For many young people, these interactions are ongoing and frequent, creating a second social universe largely unseen by the adults in their lives.

With young people's rising rates of mental health problems, including depression and suicidal ideation, it is critical to investigate the impacts—positive and negative—that online spaces have. The picture is complicated, and the evolution of the metaverse adds another layer that has not been investigated. The U.S. Surgeon General has called on the country to take a “safety first” approach to the online lives of youth, prioritizing evidence-based research into “the impact of social media on children and adolescents.”

Through funding provided by the Morgan Stanley Alliance for Children's Mental Health, The Jed Foundation (JED) has answered this call to action, and in 2023 partnered with Raising Good Gamers to identify the risks and opportunities in online spaces for the emotional well-being of teens and young adults.

The Connected Learning Lab (CLL), an Organized Research Unit at the University of California, Irvine, was retained to conduct a comprehensive review of relevant and reliable research. Using CLL's findings and input from both an interdisciplinary expert Advisory Board and a Youth Advisory Board, we created recommendations for how various stakeholders—including policymakers, tech companies, caregivers, and young people—can expand the benefit and safety of online spaces and work toward a future in which positive mental health is a priority in the design and building of online experiences.

What emerged was a complex picture of the effects of engaging in the metaverse. There are clear benefits—particularly for youth from marginalized communities who find connection online—and areas of real concern, such as the connection between time spent online and the risk of developing disordered eating.

The work ahead in creating a safe and positive online experience for youth is critical, nuanced, and broad. It will take further evidence-based research and the commitment of all stakeholders to make changes thoughtfully and develop new models that center and benefit youth. Our hope is that this review and the recommendations that flow from it provide a clear roadmap for all stakeholders to shape a metaverse where youth can thrive.



Executive Summary

Overview

Online social platforms, environments, and experiences are expanding at a dizzying rate. Young people are being invited into, and joining, a virtual universe—a metaverse—that feels almost as unlimited as the natural one. As the time they spend in these immersive spaces and augmented/virtual reality (AR/VR) environments increases, there is greater urgency to understand how young people’s interactions with these evolving spaces affect their mental health and well-being.

This report, grounded in a robust literature review and the deep engagement of an interdisciplinary Advisory Board of experts and a diverse cross-section of young people, attempts to 1) capture what we currently know about the interaction between the metaverse and young people’s mental health, and 2) make actionable recommendations to support the mental health of youth in metaverse spaces. The report focused on people 13 to 24 years old, because individuals in this group are often deeply engaged in metaverse-like spaces and are developmentally susceptible to their potential social and psychological benefits and harms.

Our working definition of the metaverse is “a persistent, immersive, networked digital ecosystem where people can play, create, learn, work, and socialize with others,” which can include fully immersive technologies like AR and VR, as well as mixed reality (MR). We explored all aspects of the interaction between young people and these digital frontiers, including the type of content they interact with, the characteristics they bring to their experience—age, race, vulnerabilities, and protective factors—and the amount of time they spend in these spaces and what they do there. The available evidence suggests that the effects on young people—both negative and positive—depend on a complex interplay of all those factors.

We see a pressing need to prioritize and support mental health in the design, build, function, regulation, and oversight of these spaces. Based on the evidence, our Advisory Board and Youth Advisory Group developed recommendations for developing and engaging with metaverse and metaverse-like spaces in ways that promote mental health. We identified key opportunities for major stakeholders—teens and young adults, their caregivers, educators, health-care professionals, influencers, and technology leaders—to leverage their specific relationships, skills, and access.

This is work that must center the people whose well-being we seek to protect: *youth*.

Results of Literature Review

The Connected Learning Lab (CLL), an Organized Research Unit at the University of California, Irvine, was retained to conduct a systematic review of the literature in multiple fields, including psychology, child development, learning sciences, and human-computer interaction (HCI).

CLL used a framework organized around risks and protective factors identified by our advisors.

We sought answers to the following research questions: 1) What are the risks and benefits to youth mental health associated with metaverse-like spaces? 2) What are the protective factors associated with positive mental health outcomes among youth in these spaces, and how do these factors interact with the potential negative impacts of engagement with the metaverse?

Areas of risk and concern: In identifying and understanding the ways metaverse-like spaces may negatively impact youth mental health, several broad areas emerge from reviewed literature.

Characteristics of the experience:

- Screen-time quality
- Exposure to harmful content
- Exposure to distressing encounters
- Emergence or exacerbation of behaviors that interfere with healthy functioning

Strengths and vulnerabilities known to be influential in mental health outcomes:

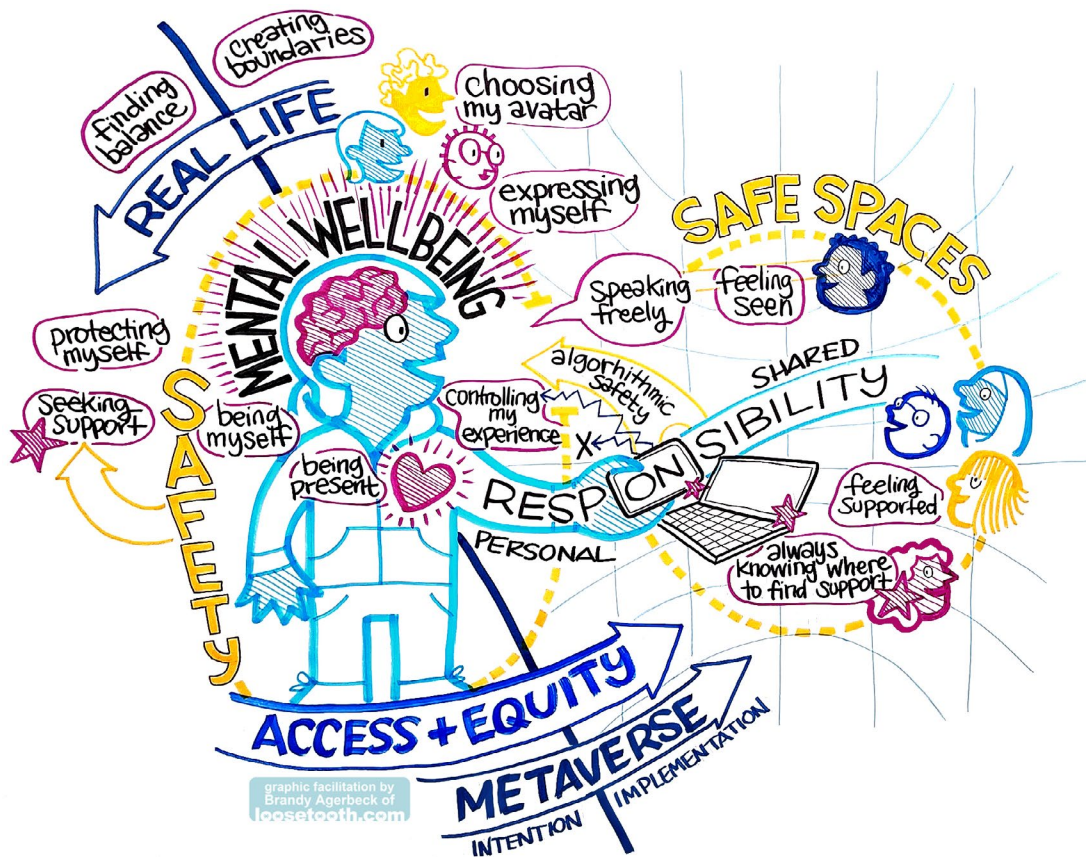
- Social comparison
- Social isolation
- Fear of missing out (FOMO)
- Online privacy

Protective factors: Although metaverse engagement involves risk to youth mental health, there also are clear opportunities given how youth currently engage online (Rideout and Fox, 2018):

- 87% of teens and tweens have gone online for mental health information
- 64% have used a mobile health app
- 39% seek others with shared conditions

These numbers demonstrate that youth rely on the internet for support and information related to mental health, and they suggest that metaverse engagement can benefit them through:

- Giving and receiving social and emotional support
- Actively resisting harmful content and behaviors
- Seeking refuge, connection, and care in identity-affirming online communities



The Rights of Youth in a Metaverse Ecosystem

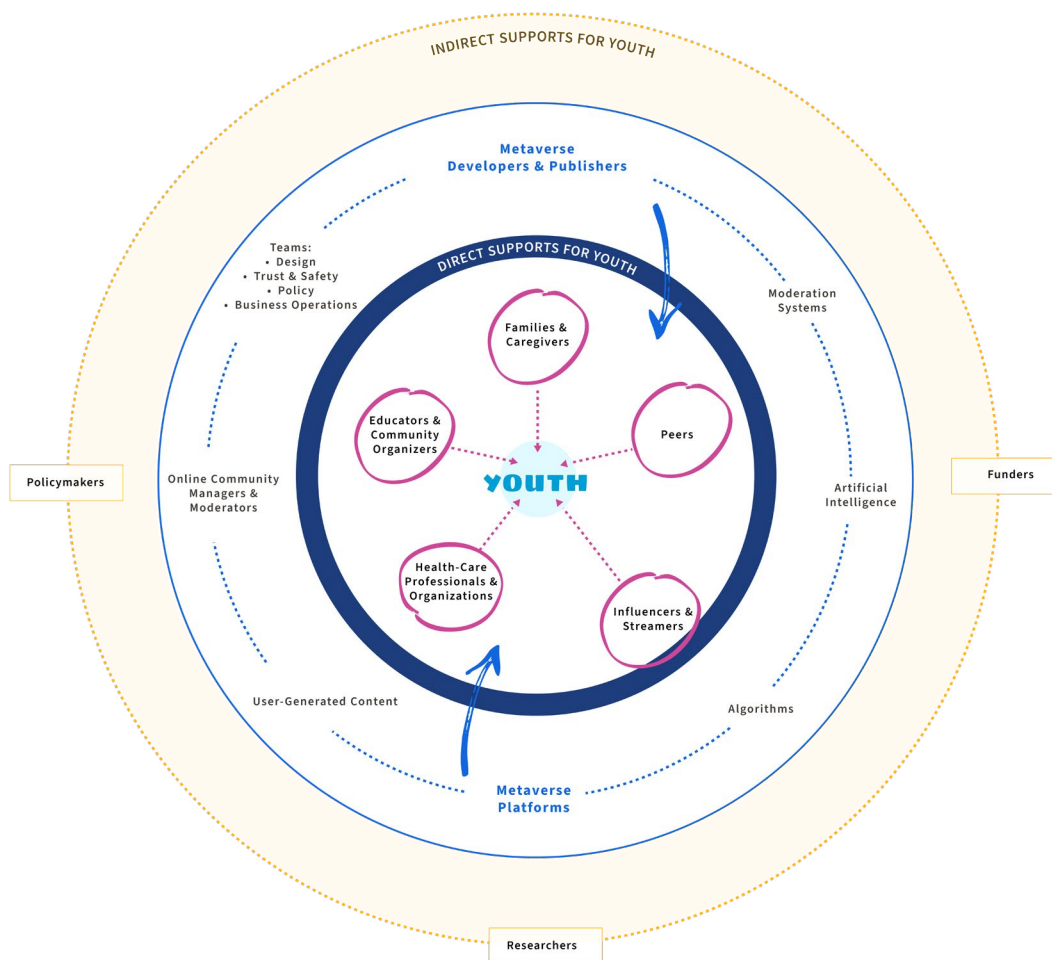
In extensive collaboration with the Advisory Board and with input and review from our Youth Advisory Board, we have created the following list of rights to which youth are entitled:

- **Safety:** Inclusive, supportive spaces where their psychological safety is prioritized.
- **Understanding:** All spaces and products should be designed to state up front what content is not allowed and the procedures for reporting offensive content or actions.
- **Mental health promotion and support:** Developers, in partnership with mental health experts, should develop accurate, evidence-based wellness content and tools.
- **Inclusion and belonging:** Young people should have the freedom to be their authentic selves and feel a sense of belonging in the metaverse.
- **Privacy:** Young people should have control and ownership of their own data and privacy.
- **Control and creativity:** Young people should have agency over their content.

Opportunities and Areas of Leverage

Metaverse-like spaces involve multiple stakeholders with intersecting—and sometimes competing—values and priorities, many of which impact youth mental health. In their analysis, the Advisory Board sought to identify and then leverage points of intersection among stakeholders. These intersections create opportunities for meaningful change by maximizing synergies, optimization, and scalability. The mapping process established a foundation for actionable recommendations that leverage both these points of connection and the Rights of Youth in a Metaverse Ecosystem.

Model of a Youth-Centered Metaverse Ecosystem



We All Have a Role to Play:

Recommendations for a Safer Metaverse

At the end of this report, we offer detailed, actionable recommendations for stakeholders to foster a metaverse that prioritizes the mental health and well-being of young people. Although organized by stakeholder groups, all recommendations are grounded in the Rights of Youth in a Metaverse Ecosystem framework and designed to leverage key areas of collaboration.

To summarize:

- Youth and their mental health must be placed at the center. The challenges today's youth face are unprecedented, and online spaces can have adverse effects if not developed responsibly and safely. If we center youth and put the rights we have defined first, we can help foster their mental health and well-being.
- It will take all of us. There is good work being done across sectors, but no single stakeholder or intervention alone can protect youth mental health.
- Policy and regulatory frameworks should provide clear guidance and incentives to prioritize youth mental health—and penalties if frameworks are violated.
- Every youth's rights in digital spaces, now and in the future, must be considered in platform design—not just to meet thresholds, but also to support digital thriving through better safety measures and added transparency.
- Support is needed for research and timely data collection and analysis to identify and rapidly respond to youth mental health needs.
- We must equip caregivers, educators, influencers, mental health providers, and youth themselves with the information and resources they need to manage and make the most of digital spaces.

Conclusion

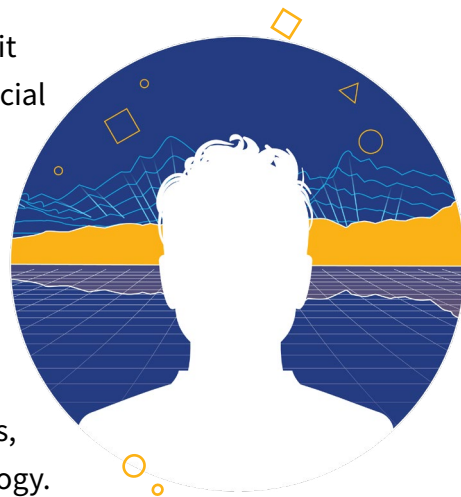
As the U.S. Surgeon General pointed out in his advisory on [youth mental health and social media](#), our country has a history of effectively safeguarding the well-being of youth by employing a “safety first” approach to areas such as vehicle and toy safety. The time has come to apply that comprehensive approach to digital platforms, digging in to do the important work of protecting and promoting youth mental health in the places where they spend much of their lives.

This report seeks to identify what we know, what we still need to find out, and how we take action on both of those fronts. We hope it will serve as a roadmap to protecting and promoting youth mental health online.

Approach

Our Working Definition of a Metaverse

The general concept of a metaverse has been with us for decades, but it currently has no definition agreed upon across academic and commercial sectors. It has been referred to by tech and media experts as the next iteration of the social internet, and in lofty terms as vivid networks of persistent virtual and MR worlds. For the purposes of this work, we initially aligned on a definition of metaverse qualities as persistent and often immersive. We agreed that a metaverse often presents as an extension of interactive games where users play, create, learn, work, and socialize with others. It also can take the form of smartphone apps, social media, virtual worlds, online gaming, and MR, AR, or VR technology. Because it can represent many different experiences for different audiences, this report refers to the concept as “a metaverse” rather than “the metaverse.”



There is also no consensus on whether a metaverse has fully arrived. Digital spaces are transforming into significantly more expansive experiences, showing hints of the vast potential of a metaverse. Given our position on the cusp of this entry into metaverses, for this report we consider a broader definition of online platforms that includes metaverse-like spaces that support content creation and sharing, community interaction and exchange, and collaboration potential, and that occur in persistent and at times immersive contexts. These include the social media platforms that have been with us for decades, such as Facebook; more recent offerings, such as TikTok; and online games that are pushing technological boundaries.

Many existing platforms already have characteristics that experts say are fundamental to a metaverse, such as avatars (digital representations users select and modify to express their real-world and virtual identities to other users). AR/VR technologies are also a common feature of metaverse-like spaces, because they allow users to blend physical and digital spaces. However, this type of melding—and thus AR/VR technologies—are not critical for metaverse-type spaces. Indeed, many common access points into these spaces—mobile phones, laptops, and game consoles—currently lack this capability. Another important aspect of a metaverse-type space, from the point of view of tech and gaming companies, is economic potential through the commoditization of virtual objects, lands, and experiences. Myriad technological advances are also driving the conceptualization and development of metaverse-like spaces, including the growing use of artificial intelligence, application of blockchain technology, and integration of business models from the gaming sector.

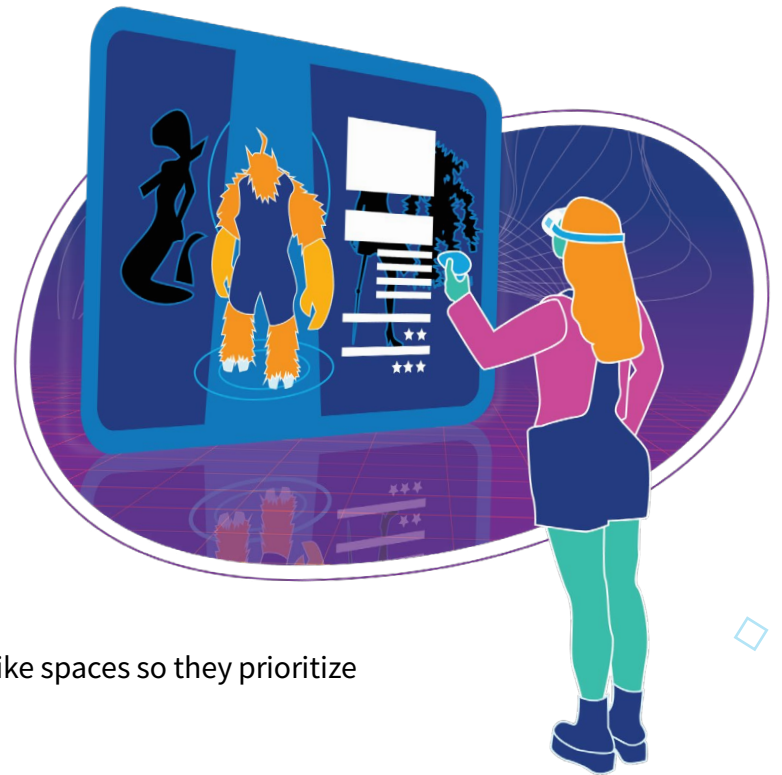
For a window into the features of a leading metaverse-like space and a glimpse into the possible future of a metaverse, consider Roblox, a popular online gaming platform with about 40 million users every day. Players inhabit a virtual world as an avatar they select and customize. In this world, they can connect with others and engage in myriad creative and community-based activities and entertainment. They can make, buy, and sell virtual clothing and accessories and attend music performances and other events. The platform supports VR technology, such as Oculus Quest and HTC Vive, but users do not need to have this capability to participate. Roblox developers are creating a spatial voice chat, and company leaders describe their goal of building technology “that can recreate how the real world looks and feels in Roblox.” Other prominent metaverse-like platforms include AltspaceVR, Fortnite, the Sandbox, and Minecraft.

Youth

For this report, we define young people as teenagers and young adults ages 13 to 24. We define metaverse-like spaces and their core features and qualities as outlined above.

Our leading questions were:

- ① What might young people expect from a metaverse regarding their well-being and development?
- ② What has the research identified as risk factors for, and protective factors against, negative behavioral and mental effects of a metaverse at the individual, interpersonal, and community levels?
- ③ What are the most important ways for tech companies, policymakers, and groups that support young people to build, envision, and influence metaverse-like spaces so they prioritize young people’s mental health?



To answer these questions, we brought together youth mental health experts, metaverse developers, internet researchers, educators, caregivers, policymakers, young people, and others to both identify the opportunities and risks of metaverse and metaverse-like spaces and develop recommendations for actions that developers, metaverse communities, youth users, caregivers, and regulators can take to ensure mental health risks are mitigated and opportunities to increase mental health protective factors are leveraged. Over a period of six months, this group engaged in the following activities:



Literature Review

The Connected Learning Lab (CLL), an Organized Research Unit at the University of California, Irvine, was retained to conduct a systematic review of the literature in multiple fields, including psychology, child development, learning sciences, and human-computer interaction (HCI).

CLL is dedicated to studying and mobilizing learning technologies in equitable, innovative, and learner-centered ways. Over 30 faculty are members of the CLL, representing a diverse range of disciplines and departments, including anthropology, comparative literature, computer science, education, English, informatics, nursing, psychological sciences, and sociology.

CLL's literature review was grounded in a framework organized around risks and protective factors informed by our Advisory Board. (See [Appendix B](#) for the full framework; literature review available upon request; see also “Literature Review Methodology” below.)

Expert Advisory Board

JED engaged the nonprofit partnership Raising Good Gamers to recruit and manage a national board of leading mental health and youth development experts, researchers, metaverse developers, and policymakers over three sessions to examine the findings of the literature review, discuss forces shaping metaverse-like spaces, identify key inflection points and areas of leverage, and make recommendations for a variety of stakeholders that best support youth mental health and well-being. (See [Appendix A](#) for the complete list of advisors.)



Youth Advisory Group

JED conducted a national outreach effort to young people ages 16 to 24 to collectively explore their understanding of what the metaverse is and could be, discuss the rights and responsibilities they perceive important for themselves and other metaverse users, and develop ideas and deepen thinking for making metaverse-like spaces inclusive, youth-supportive, and healthy. The group engaged in both pre-work and facilitated conversation evaluating and deepening the Advisory Board's recommendations.



Reporting Out

This report synthesizes the outputs, learnings, and recommendations that emerged from this process, including key findings from the literature review, identification of key areas of leverage and opportunity, and core recommendations for a range of stakeholders, including industry, developers, policymakers, young people, and caregivers, to best support the mental health of young people as they engage in this next frontier of technology.



Literature Review

The review, conducted by CLL, was led by Katie Salen Tekinbaş and Madison E. Taylor, with contributions by Andre Adame, Stephen Schueller, and F. Ria Khan. The full literature review will be published through the Connected Learning Alliance in September 2023. Material included in this section is drawn directly from the original review.

CLL's literature review was grounded in a framework organized around risks and protective factors informed by our Expert Advisory Board. (See [Appendix B](#) for the full framework; see also “Literature Review Methodology” below.)

Literature Review Methodology

In order to effectively explore metaverse risks to youth mental health, a thorough review of literature from fields such as psychology, child development, learning sciences, and HCI, was conducted using a framework (see [Appendix B](#)) organized around risks and protective factors. CLL sought to answer the following questions: 1) What are the risks and benefits to youth mental health associated with metaverse-like spaces? 2) What are the protective factors associated with positive mental health outcomes among youth in metaverse-like spaces, and how do these factors interact with the potential negative impacts on youth mental health related to participation in metaverse-like spaces?

The review was intended to identify benefits and risks with clear implications for the development of actionable recommendations. Of particular focus was a) consideration of adolescence as a developmentally significant period, b) explicating the lessons learned from research on social media, games, and AR/VR technologies as precursors of the metaverse, and c) understanding the interrelatedness of offline and online vulnerabilities.

Interaction in the metaverse relies on human-computer interfaces, such as mobile headsets, wearable displays, and avatars, or interaction with AI-powered agents, such as robots or smart devices (Lee et al, 2021; Benrimoh, 2022; Wallace et al, 2023), but emerging environments and interfaces will likely be built on current internet affordances, such as social media, gaming, and current AR and VR environments. Although clear theoretical and empirical models for understanding the relationship between emerging technologies and youth mental health are lacking, a review of what we have learned about the relationship between online engagement and adolescent well-being provides useful direction for groups with intrinsic interest, including researchers, funders, parents, caregivers, educators, and metaverse developers.

The review was conducted in summer 2022 and included literature in the areas of:

- Psychology
- Sociology
- Learning sciences
- Game studies
- Adolescent development
- Human-computer interaction

Key search terms included:

- Target demographic characteristics (e.g., “adolescent,” “teen,” “young adult”)
- Metaverse qualities (e.g., “social media,” “online gaming,” “virtual reality”)
- Mental health outcomes (e.g., “well-being,” “depression,” “self-harm,” “anxiety,” “social comparison”)
- Content and behavior exposure risks (“harmful content,” “cyberbullying”)

Databases used:

- Academic Search Complete
- APA PsycArticles
- APA PsycINFO
- Google Scholar
- Jstor
- ProQuest
- Scopus

Google inclusion and exclusion decisions were based on empirical soundness (e.g. study design, sampling method, and analytical approach). Additional literature of interest was identified by mining the citations of particularly relevant articles. All papers selected for review were written in English.

To more fully unpack the two primary research questions, the literature review was focused on three specific areas:

- **Common concerns and risks** associated with social media and metaverse-like spaces, including amount of screen time, exposure to harmful content, and distressing social encounters.
- **Opportunities to improve mental health** through participation in metaverse-like spaces.
- **Risk and protective factors** users bring to their experience.

The review focused on identifying the ways risk and protective factors work across multiple ecological levels, such as individual (demographic factors and personality traits), interpersonal (family and social support), and community (tech and gaming companies and governing bodies). Particular attention was paid to several populations for whom the impacts of a metaverse, both positive and negative, may be amplified, including young people who are female or LGBTQIA+ and people whose



gender, socioeconomic status (SES), age, or race are tied to experiences of poverty, instability, and marginalization. Factors known to be particularly influential in affecting the quality of young people's metaverse experience, including social comparison, social isolation, and fear of missing out, were also reviewed in greater detail.

What the Literature Tells Us

Literature focused on understanding the relationship between engagement in metaverse-like spaces and youth mental health must be considered in a larger developmental context. Adolescence and young adulthood are dynamic and formative developmental stages, particularly related to identity formation and social and emotional regulation capacity. Only early childhood rivals adolescence in the extent and complexity of brain development, and there are particularly significant changes in the brain systems that support control, reward, and social information (Andrews et al, 2021; Pfeifer and Allen, 2021; Chiu and Chen, 2022).

These neurological changes are accompanied by heightened sensitivity and risk-taking, some side effects of which can be emotional dysregulation, mood swings, and susceptibility to dark or negative mood states (Steinberg, 2014; Vannucci, et al, 2020). This developmental context may leave youth vulnerable to fear appeals and emotional manipulation—characteristics that are easily exploited in a virtual landscape by shady marketing practices and algorithmic dark patterns that use search, posting, and exchange data to customize messages, ads, and other content designed to capture attention and keep users engaging and engaged.



Adolescence and young adulthood are also periods in which individuals develop habits intrinsically tied to mental health and well-being, particularly in areas related to sleep, learning, nutrition and exercise, and social and emotional engagement and regulation (World Health Organization, 2021). Metaverse-like spaces have become increasingly common landscapes for meeting and influencing developmental mandates, so it's critical to consider the role social media and immersive digital spaces, such as social VR platforms and multiplayer games (e.g. AltspaceVR, Discord, Roblox, and Minecraft), play in shaping development. This is particularly important in light of evidence that digital experiences may interact with sensitive developmental windows in ways that heighten or reduce mental health risks and benefits (Orben et al, 2022).



Understanding the intersection of development with virtual affordances will not only help caregivers, educators, and policymakers support healthy engagement, but it can also directly inform design and research to reduce potential harm and promote healthy learning and development. Moreover, since metaverse-like spaces will only expand in scope and immersive engagement with time, understanding what is known about the risks to and opportunities for adolescent mental health is somewhat urgent (Rosenberg, 2022).



Areas of Risk and Concern

In the course of identifying and understanding the ways in which metaverse-like spaces may negatively impact youth mental health, several broad areas emerged from reviewed literature.

Characteristics of the experience:

- Screen-time quality
- Exposure to harmful content
- Exposure to distressing encounters
- Emergence or exacerbation of behaviors that interfere with healthy functioning

Strengths and vulnerabilities known to be influential in mental health outcomes:

- Social comparison
- Social isolation
- Fear of missing out (FOMO)
- Online privacy

A brief summary of the findings for each of these are below.

Screen Time

The possibility that extended use of digital media could compromise young people's mental health is a long-standing concern among a range of stakeholders, including researchers, policymakers, caregivers, educators, and health-care professionals. A close review of research suggests that the overall direct effects of screen time on mental health are small (Paulich et al 2021) and that they interact with other factors, such as the specific experiences youth have while engaged in metaverse-like spaces, the multiplicity of digital technology used, and individual differences (Orben, 2021).

In general, findings suggest that spending more than three hours a day in metaverse-like spaces is associated with increased risk of depression, anxiety, and suicidal ideation (Office of the Surgeon General, 2023). One review on the subject, for example, suggests that increased social media use does not necessarily indicate a direct causal relationship to social isolation, but rather that lonely individuals are more likely to use social media in ways harmful to themselves (e.g., problematic or addictive social media use) and others (e.g., endorsing extremist beliefs) (O'Day and Heimberg, 2021; Kowert et al, 2022). What is clear is that passive participation, such as scrolling and reposting rather than actively engaging or using metaverse-like spaces to the detriment of sleep or academic and social responsibilities, is associated with poor mental health outcomes (Glover et al, 2022; Orben and Przybylski, 2019; Thorisdottir et al, 2019; Royal Society for Public Health, 2017).

Harmful Content

The literature review examined four categories of content that stakeholders—such as the American Academy of Pediatrics—have identified as being of particular concern:

- Eating disorders, which are marked by a deep dissatisfaction with bodily appearance and unhealthy coping behaviors such as food restriction and excessive exercising.
- Self-injurious thoughts and behaviors (SITB), which refer to both suicidal and nonsuicidal thoughts and behaviors.
- Substance abuse, which for the purposes of this report refers to the consumption of alcohol and other substances to the extent that it interferes with daily functioning.
- Sexually explicit material, which refers to pornographic material and other sexual content (Chassiakos et al, 2016).

Of the four categories of potential harmful content reviewed, exposure to eating disorder content, SITB content, and addictive-substances content were clearly associated with negative mental health outcomes in youth (Chassiakos et al, 2016; Oksanen et al, 2016; Biernesser et al, 2020; Nesi et al, 2021; Curtis et al, 2018; Nesi et al 2017).

In each of these domains, it is clear that content—video, image, or text content from individual or corporate users—is posted, widely shared, and then emulated by large numbers of youth. Posts and content messages are easily shared across platforms as well, expanding reach (Primack and Escobar-Viera, 2017; Allison et al, 2014). A TikTok search of the hashtag #whatleatinaday, for example, will surface videos of thin youth sharing details and results of adhering to a low-calorie diet. Viewing even one or two videos in this area prompts algorithms to show viewers more of the same content (Bell, 2022). Regular and repeated exposure to the content can shape youth viewer ideas about what is normal and desirable—both core factors in disordered eating behaviors (Primack and Escobar-Viera, 2017; Custers, 2015).

Similarly, individuals vulnerable to self-injury may encounter material that subtly or overtly details methods, benefits, or other self-injury-supportive messages that influence offline behavior (Quiles Marcos et al, 2013; Keel and Forney, 2013). Consider these scenarios, which are highlighted in the original literature review (Salen Tekinbaş, et al 2023):

- A young person interested in fitness and healthy recipes frequents Instagram for inspiration. Over time, they get exposed to more and more content lauding individuals with thin, perfectly toned bodies, and they start to feel that they are not healthy enough if they don't resemble the images

they see online. Their new desire for thinness leads them to search for and discover content on these same social media platforms that promotes disordered eating behaviors.

- A teen struggling with difficult life circumstances begins to follow social media accounts that post depression and other content related to mental health struggles that they feel resonates with them. Over time, one of these accounts begins to reblog posts that contain depictions of self-harm in graphic detail. When the teen's life circumstances become worse, they try one of the methods of self-harm described in the blog posts. When the method of self-harm reduces their emotional pain, the teen continues to use it when they get distressed.

Exposure to sexually explicit content has a much less robust body of research to examine, so findings in this area are more sparse and less definitive. What does exist shows mixed findings (Stulhofer et al, 2022). Although 25% to 34% of young people report exposure to unwanted sexual content online, about 6% to 9%—disproportionally adolescent females—report feeling distress from the exposure (Mitchell et al, 2003; Wolak et al, 2006; Livingstone and Bober, 2004). In some cases, exposure to sexual content can feel supportive for individuals, such as LGBTQIA+ young people, who feel otherwise marginalized and confused (Attwood et al, 2018; Litsou et al, 2021). Sexual content experienced in the context of sexual harassment, coercion, and abuse is associated with mental health distress (e.g., Gassó et al, 2019; Razi et al, 2020; Patel et al, 2022).

Distressing Encounters

Because social interaction is a common feature across all metaverse-like spaces, it comes with many of the risks inherent to human exchange. The anonymity and privacy settings, however, mean it is easier to be exposed to distressing encounters online, such as cyberbullying, sexual harassment, extremism, and hate speech and actions.

In many ways, distressing online encounters are manifestations of traditional bullying and sexual harassment in virtual spaces, but online exposures may be more difficult to avoid and potentially more harmful. Cyberbullying, harassment, and hate speech all share common dimensions and can co-occur. Consider these scenarios, which are highlighted in the original literature review (Salen Tekinbaş, et al 2023):

- A teen posts on Reddit seeking advice for dating as a trans girl. The comments on her post are mostly supportive, but she is DM'd by strangers telling her she is not a real girl so no one would want to date her or she's just confused and needs God. The teen feels hurt after reading these comments, even though the moderators in the subreddit were supportive and banned the harassing accounts. She begins to feel like no one would date her, and she closes herself off from developing romantic relationships.

- A Muslim youth is streaming themselves playing a popular video game on Twitch. While they are streaming, another individual enters the stream from browse mode and writes Islamophobic comments in the stream's chat. The youth reads the comments, becomes distressed, and ends the stream.
- A queer youth of color is playing GTA V roleplay, a multiplayer mod for the PC version of the popular video game Grand Theft Auto V. Other players harass them in a variety of ways without using conventional verbal slurs. For example, their character is killed, kidnapped, or surrounded and harassed physically in the game to the point that the youth becomes distressed and logs off. They begin to feel hopeless and helpless about being able to interact with others online without encountering hate and harassment.

Unfortunately, these kinds of distressing experiences are common among youth.

- Nearly half of all U.S. adolescents report experiencing cyberbullying or harassment (Vogels, 2022).
- Even more (82%) young people report witnessing hate speech in metaverse-like spaces, and 64% of users of online gaming platforms report being victims of hate speech (Kowert and Cook, 2022).
- Many metaverse-like spaces that youth engage with, including online gaming communities, streaming platforms, and social media, include large numbers of users who engage in hate speech (Alava et al, 2017; Lakhani, 2021; Gray, 2012b).
- Nearly half (41%) of youth report watching or reading material featuring hate speech from extremist groups online (Grizzle and Perez Tornero, 2016), and youth from gender, sexual, racial, and religious minorities are at increased risk of directly experiencing hate speech (ADL, 2021; ADL, 2022).
- Nonverbal hate actions may also be a concern, particularly in online gaming, since player anonymity allows for overt discrimination, slurs, and aggressive harassment (Gray, 2012a; Gray, 2012b).
- These experiences are supported by platform features in some cases. In Roblox, for example, users can create virtual worlds specifically for the purpose of engaging in hate-based actions, such as Nazi roleplay games and death camps.

Youth exposed to distressing experiences are at increased risk for mental health challenges as a result.

Key Findings

- Studies consistently show increased risk of depressive symptoms, substance abuse, and SITB among young people experiencing one or more forms of cyberharassment (Schneider et al, 2012; Hinduja and Patchin, 2017; Litwiller and Brausch, 2013; Bottino et al, 2015; Biernesser et al, 2020; Nesi et al, 2021; Zhu et al, 2022; Bucchianeri et al, 2014; Zhu et al, 2022).
- Individuals who are experiencing depression and anxiety—and who rely on social media to connect with others online—are also more likely to be victims of cyberbullying (Bottino et al, 2015).
- Being a perpetrator—not just a victim—of cyberbullying also increases the risk of suicide in individuals (Hinduja and Patchin, 2017).
- Online hate speech victimization is associated with increased depression symptoms (Wachs et al, 2022; Saha et al, 2019; ADL, 2021).
- There are significant links between online sexual harassment, anxiety, and depression among adolescents, with more severe outcomes associated with girls (Bucchianeri et al, 2014; Bendixen et al, 2018; Zetterström Dahlqvist and Gillander Gådin, 2018; Duncan et al, 2019; Ståhl and Dennhag, 2021).
- Females and marginalized groups are at heightened risk of one or more forms of cyberbullying or harassment, and males are more likely to be perpetrators.

Extremism represents a unique form of distressing encounter, since the distress is less linked to being specifically targeted. The harm comes from recruitment into an ideology that essentially spreads hate and—in worst-case scenarios—violence. Purposeful radicalization of youth by far-right extremist groups is common in metaverse-like spaces, especially within gaming servers (Alava et al, 2017; Gallagher et al, 2021; Lakhani, 2021; ADL, 2022; Koehler et al, 2023; Rosenblat 2023).

Although youth already sympathetic to the ideologies are easier and primary targets, even non-sympathetic youth may be drawn into the worldview with repeated exposure (Schlegel and Amarasingam, 2022). The assumption that youth experiencing mental health challenges are uniquely vulnerable to radicalized appeals lacks empirical validation (Vermeuelen et al., 2022), but both loneliness (Richardson et al, 2017; Kowert et al, 2022) and social isolation (McCauley and Moskalenko, 2011; Loades et al, 2020)—common risk factors for mental health challenges—have been empirically tied to increased support for extremist ideologies.

Benefits of Metaverse Engagement

Although there are risks associated with metaverse engagement, there also are clear opportunities given how youth currently engage online (Rideout and Fox, 2018):

- 87% of teens and tweens have gone online for mental health information
- 64% have used a mobile health app
- 39% seek others with shared conditions

These numbers demonstrate that youth rely on the internet for support and information related to mental health and suggest that metaverse engagement can benefit youth through:

- Giving and receiving social and emotional support
- Actively resisting harmful content and behaviors
- Seeking refuge, connection, and care in identity-affirming online communities

Social Support

Opportunities to forge connections with others who share similar interests, outlooks, or experiences are a commonly reported motivation for metaverse engagement (Ito, et al, 2020) and have repeatedly been shown to enhance well-being (Rideout and Robb, 2019; Selfhout et al, 2009; George and Odgers, 2015) and fulfill youth needs for belonging (Veissière and Stendel, 2018). Participation in online communities around shared interests offers useful contexts for developing social and emotional skills and habits, including those related to conflict resolution and problem-solving (Slovak et al, 2018; Salen Tekinbaş, 2021). Online forums and communication opportunities are linked to self-disclosure among isolated or socially anxious adolescents, and they enhance social connectedness while decreasing depressive symptoms (Canadian Paediatric Society, 2019).

Creating Spaces of Refuge, Connection, and Care

When social support becomes a group experience, metaverse-like spaces can become communities of refuge, connection, and care (Salen et al, 2021). When in-person social networks are hard to locate—such as in the case of LGBTQIA+ youth—online friends play critical emotional-support roles (Ybarra et al, 2015). Specific platforms can serve as refuges for youth seeking communities of identity affiliation. These platforms include Tumblr, which offers a space for queer youth to find peers and



- friends and locate communities that may be unavailable elsewhere (Byron, 2019),
- and private text-messaging groups used by Black girls to support one another (Tanksley 2020b) and create spaces of personal healing (Tanksley 2020; 2020b; 2022). Youth also are creating identity-affirming communities on customizable platforms, such as those created for BIPOC, LGBTQIA+, autistic, and disabled youth on Minecraft and Discord (Cappadocia et al, 2012; Tai-Ling et al, 2022; Ringland et al, 2016).

Risk and Protection: What Users Bring to Metaverse-like Spaces Matters

Research suggests that many of the risks and protective factors that influence mental health offline play a similar role online. It is important to know that any potential harm or benefit may be magnified for vulnerable groups. Individuals with social and emotional challenges, for example, may turn to a metaverse for support, but they also may be more likely to experience isolation and anxiety as a result of using online spaces (Rideout and Fox, 2018). What each user encounters online also interacts with demographic and individual-level characteristics in unique ways, meaning benefits and harms are not evenly distributed. Black youth, for example, are more likely to encounter racist content online than their white peers (Rideout and Robb, 2019), and negative online experiences, such as social comparison and harassment, are stratified by gender, sexual orientation, age, race, and class (Ito et al, 2020).

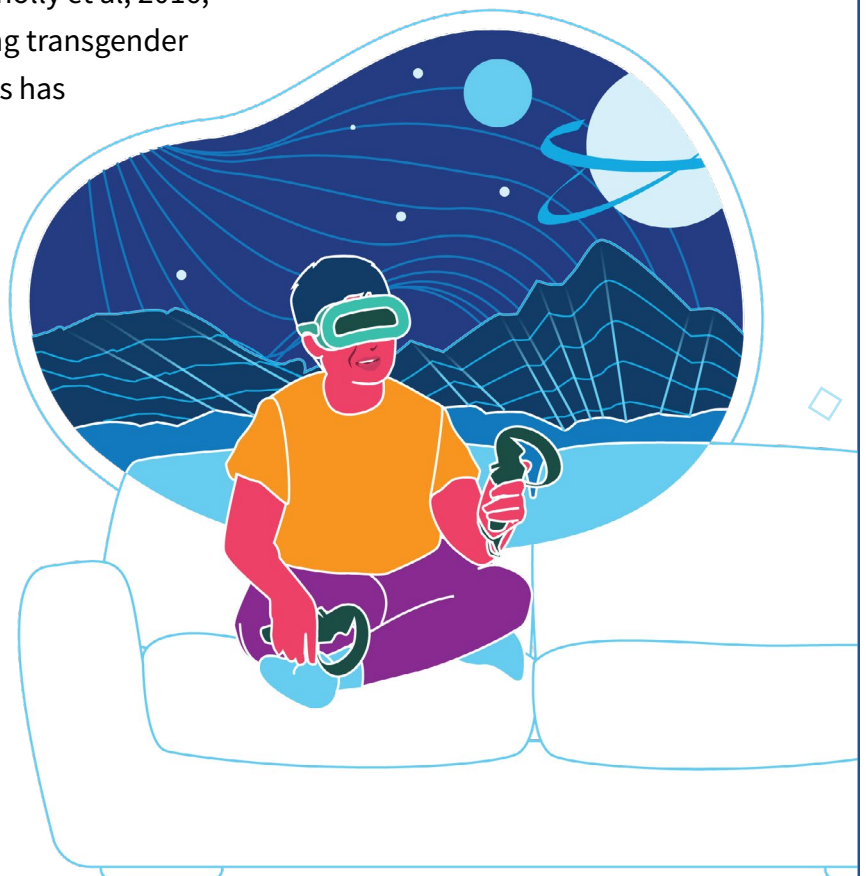
Individual-Level Factors

Many of the well-established demographic vulnerabilities known to influence mental health in everyday life—such as age, socioeconomic status, gender identity, sexual orientation, race, and ethnicity—also influence mental health outcomes in online forums. More specifically:

- **Age:** Adolescent and young adult interest in metaverse-like spaces is not surprising in light of the many ways it allows for exploration of core developmental impulses, particularly related to identity and social arenas. Research on the relationship between age, online experience, and mental health shows that there is significant individual variation, but there are also sensitive periods in which the risk of negative impact from participation in metaverse-like spaces is

heightened. Longitudinal research found that females ages 11 to 13 and 19 and males ages 14 to 15 and 19 are particularly vulnerable to negative mental health impacts as a result of online activity (Orban et al, 2022; Crone and Konijn, 2018). This aligns with what is known about neurological changes in the social and reward center of the brain during young adolescence compared to older youth (15 to 16 years) (Van Hoorn et al, 2016; Crone and Konijn, 2018; Blakemore and Mills, 2014; Immordino-Yang and Gotlieb, 2017), and suggests that particular attention must be paid to early adolescence in consideration of policy, platform development, and education.

- **Socioeconomic status (SES):** Research consistently associates low SES with worse mental health outcomes compared to higher SES (Reiss, 2013; Yang et al, 2022). Compared to their higher SES peers, youth from low SES families are significantly more likely to experience negative mental health outcomes as a result of metaverse participation, such as exclusion from online groups, harassment by strangers, and negative comments and messages on their accounts (Skogen et al, 2022; Lee et al, 2022). Young people from low SES backgrounds are also less likely to possess factors we know are protective, such as adult supervision and family monitoring of participation in online spaces (Walker et al, 2015; Horvat et al, 2003).
- **Sexual identity:** Although participation in metaverse-like spaces can be a source of peer support and information about health (Selkie et al, 2020; Schoenebeck et al, 2021), transgender youth experience higher rates of depression, self-harm, and suicide attempts as a result of metaverse participation than cisgender youth (Connolly et al, 2016; Reisner et al, 2015). Conversely, providing transgender youth with space to affirm their identities has been associated with improved mental health, largely through peer support, validation of experiences, access to educational materials for friends and family, and information about health-care decisions (Selkie et al, 2020).
- **Race and ethnicity:** Overt and subtle discrimination against racial and ethnic minority youth is particularly common in online spaces, and it can lead to depression and anxiety among members of these groups (Tynes et al, 2008; Cano et al, 2020). Content portraying racial violence, for example,



is both common and associated with negative mental health outcomes among Black and Latiné adolescents (Tynes et al, 2019).

It is also clear that digital spaces offer unique opportunities for building connection and community, strengthening cultural identities, and engaging in collective change-making activities, all of which are supportive of mental health (Lee, 2012; Brock, 2012; Earl et al, 2017).

- **LGBTQIA+ identity:** Since youth users in these groups are at high risk of distressing encounters, LGBTQIA+ young people are also at elevated risk for depression and psychological distress as a result of this experience. At the same time, online spaces may provide resources for self-exploration (DeHaan et al, 2013; Attwood et al, 2018; Fox and Raltson, 2016) and opportunities for supportive online friendships (Ybarra et al, 2015). Young adults report using digital spaces to access educational resources regarding sexual identity, find role models within LGBTQIA+ communities, and develop their identities based on their sexual orientation (Fox and Raltson, 2016).

Intrapersonal Individual-Level Factors

Although there is a diverse array of psychological and demographic factors that determine what youth encounter, experience, and take away from their time in metaverse-like spaces, five dominant factors consistently surfaced as influential regardless of specific platform affordances:

- Social comparison
- Fear of missing out
- Social isolation
- Online privacy
- Self-esteem, self-regulation, and resilience

A high-level overview of the way each factor mediates user mental health outcomes is summarized below.

Social comparison: Research suggests that youth metaverse users, especially young females, are vulnerable to “upward comparison”—comparing oneself to others in ways that render the other as ideal and oneself as less than ideal (Vogel et al, 2014; Dodemaide et al, 2022). Although it can sometimes motivate self-improvement (Verduyn et al, 2020), it is more commonly associated with a range of negative mental health outcomes (Dodemaide et al, 2022; Vogel et al, 2014; Nesi and Prinstein, 2015; Appel et al, 2016; Ho et al, 2016; Lewallen and Behm-Morawitz, 2016). The psychological tendency to compare one’s performance, looks, or popularity is exacerbated by algorithmic features that amplify hierarchies of performance or preferences, such as gaming leaderboards that show other gamers’ scores to promote competition.

Fear of missing out (FOMO): FOMO is a “pervasive apprehension that others might be having rewarding experiences from which one is absent” (Przybylski et al, 2013), and it is most often



experienced as fear of missing timely interactions, fear of losing popularity, and fear of missing a valuable opportunity (Alutaybi et al, 2019). FOMO can be particularly acute for youth because of the primary role social exchange and standing plays developmentally. Feeling left out is often painful and anxiety-provoking for youth (Chiu and Chien, 2022). FOMO is linked to social anxiety and clinical depression (Reer et al, 2019; Gupta and Sharma, 2021), as well as a desire for belonging and popularity (Beyens et al, 2016).

Social isolation: A robust body of literature links social isolation to poor mental health outcomes (O'Day and Heimberg, 2021; MacDonald et al, 2022; Lawrence et al, 2022; Shannon et al, 2022). Since there is research linking participation in metaverse-like spaces to feelings of isolation and loneliness (O'Day and Heimberg, 2021; MacDonald et al, 2022; Lawrence et al, 2022; Shannon et al, 2022), feelings of social isolation have been posited as one of the ways in which digital engagement may negatively impact mental health. Research, however, suggests a complex relationship (Reer et al, 2019; O'Day and Heimberg, 2021). It is clear, for example, that lonely individuals are more likely than their less lonely peers to use social media in unhealthy, problematic, or addictive ways, or in ways that are harmful to others, such as endorsing extremist beliefs (O'Day and Heimberg, 2021; Kowert et al, 2022). It also is clear that spending a lot of recreational time—more than three hours—in metaverse-like spaces can disrupt important relationships and the meeting of other core life needs, such as sleep.



Privacy: There is a link between youth mental health outcomes and lack of internet privacy when it enables exposure to or engagement in cyberbullying, harassment (Mesch, 2009), and image-management challenges (Boyd, 2014). Effects can also be bidirectional and mutually reinforcing. For example, low privacy settings are associated with depression (Radovic et al, 2017), and users with symptoms of depression or anxiety are more likely to make poor privacy decisions (McKenna et al, 2002).



How platforms manage privacy is also impactful on youth mental health through personalized advertising, sharing of user data, and use of data to train algorithms (Bibri and Allam, 2022). Using more immersive technologies, such as VR, results in even more significant risks, since there will be data on facial and body movement, cross-platform digital activity, “room” design data, and VR-linked social interaction data in addition to mostly static text or picture data (Fernandez and Hui, 2022; Bibri and Allam, 2022; Wang et al, 2022), all of which can be tracked, sold, and otherwise exploited (Bibri and Allam, 2022; Fernandez and Hui, 2022; Wang et al, 2022).



Fortunately, heightened awareness around the importance of privacy settings has resulted in better protections at every level. Adolescents demonstrate adult-equivalent understanding of how digital networks think about and treat data until they reach young adulthood (Moreno et al, 2014; Aggosto

and Abbas, 2016; Adorjan and Ricciardelli, 2019; Zarouali et al, 2020), and even younger teens report using privacy-regulation strategies, such as withholding sensitive information, setting profiles to “friends only,” blocking threatening users, and consulting others if they’re uncertain what to do (Davis and James, 2011; Adorjan and Ricciardelli, 2019; Madden et al, 2013).

Self-esteem, self-regulation, and resilience: Although we still do not know a lot about how metaverse-like spaces affect self-esteem (Valkenburg et al, 2021; Bendixen et al, 2018; Brighi et al, 2012), it is clear that coming to digital platforms with low self-esteem or negative thoughts and feelings about one’s worth and importance enhances vulnerability to negative mental health impacts (Rosenberg, 1965; Moksnes and Reidunsdatter, 2019; Chua and Chang, 2016; Fioravanti, 2012; Wang et al, 2018; Banyai et al, 2017). Bringing high self-esteem to the platform, however, is a protective factor against the typically negative impact of making negative social comparisons in metaverse-like forums (Martinez-Pecino and Garcia-Gavilan, 2019; Niu et al, 2018).

Similar dynamics are at play for self-regulation and resilience, since individuals with poor self-regulation—the ability to understand and control emotions and behavior in diverse situations—are more likely to engage in digital activities in ways that disrupt other aspects of their lives, such as sleeping, exercising, and socializing offline (Napolitano et al, 2011; Du et al, 2021; Reinecke et al, 2022). Conversely, strong self-regulation skills appear to allow young people to engage on social media in beneficial ways, such as through positive social comparison (Reinecke and Rieger, 2020). Similarly, individuals with low resilience—defined as “the ability to maintain or regain mental health, despite experiencing adversity”—are at greater risk of online abuse (Wald et al, 2006; Whittle et al, 2013). When resilience is present, however, they are less likely to experience depression following exposure to hate speech and to engage in negative social comparison (Wachs et al, 2022; Wetherall et al, 2019).

Community-Level Factors

High-quality social support reduces depression, anxiety, suicidal ideation, and eating disorders (Hefner and Eisenberg, 2009), and perceived parental social support is linked to lower risk of maladaptive internet and gaming use (Esen and Gündoğdu, 2010; Moge and Romano, 2020). Strong peer relationships have also been linked to fewer reported instances of sexual harassment (Mitchell et al, 2014) and reduced symptoms of anxiety and depression (Ståhl and Dennhag, 2021). Conversely, low social support is linked to increased likelihood of perpetrating acts of cyberbullying and sexual harassment (Leemis et al, 2019).

Family qualities such as family cohesion, presence or absence of parent-adolescent conflict, family interpersonal dynamics, and communication skills are powerful forces in internet and video game use among youth. In general, higher family cohesion, presence of adults aware of youth online

activity, positive relationships among family members, and ability to communicate honestly and openly about online activity, preferences, and concerns are all linked to healthier online experiences. (Yen et al, 2007; Park et al, 2008; Lam, 2014; Hyun et al, 2015; Lee et al, 2016; Adams et al, 2019; Yayman and Bilgin, 2020). Family members can also influence youth mental health outcomes through family practices, rules, and norms intended to govern online activities and guide youth in creating healthy boundaries.

- **Discussing online behavior** with young people leads to more online opportunities and risks. Meanwhile, restrictive mediation, such as limiting screen time and prohibiting certain activities or websites, is associated with both fewer opportunities and risks (Livingstone et al, 2017).
- **Setting technical limits** on youth media devices via hardware or software decreases the likelihood of problematic online gaming behaviors (Benrazavi et al, 2015). Excessive restrictions on media use, however, can backfire and exacerbate behavior that disrupts daily functioning (Livingstone and Helsper, 2008; Shin and Huh, 2011; Fischer-Grote et al, 2019), which increases depression, anxiety, mood dysregulation, and stress (Shannon et al, 2022; Kwon et al, 2013).
- **Co-creating rules for metaverse engagement** is associated with reduced risk of cyberbullying perpetration and victimization (Mesch, 2009). Parental advice to youth on internet use reduces the likelihood of privacy risks and harmful content (O’Keeffe et al, 2011).
- **Co-using**—also referred to as co-viewing or co-playing—may also be useful. Research in this area is nascent, but it suggests that co-use can increase family closeness—a factor associated with a lower likelihood of maladaptive behavior—with even greater benefits to families with poor communication (Wang et al, 2018; Musick et al, 2021).

Platforms—and the users who frequent them—represent another form of influential community, one capable of either exacerbating or insulating young people from poor mental health outcomes. A platform’s terms of use, rules, and guidelines, as well as the social practices established and reinforced by community members, set the possibilities for—and terms of—exchange, while peer users establish engagement norms (Birk et al, 2016; Chandrasekharan et al, 2018). Posting community rules can improve compliance by first-time users (Matias, 2019), and some scholars have urged platforms to clearly define, communicate, and enforce bans on harmful content (Powell and Henry, 2017). Such appeals, however, have been largely ineffective. That is likely because online moderation roles are often at odds with platform-driven algorithmic moderation intentions (Grimmelmann, 2015; Chandrasekharan et al, 2018; Salen Tekinbaş et al, 2020), and the challenges confronted by community managers and volunteer moderators are too big (Bulut, 2020; Sparrow et al, 2021; Grace et al, 2022).

Advisory Board Synthesis and Feedback

In exploring the literature review, our interdisciplinary Advisory Board identified a need for a comprehensive, multi-stakeholder approach involving youth, caregivers, educators, policymakers, technology companies, and mental health professionals. The board also outlined clear priorities for those stakeholders, including:

- **Understanding differential impact:** It is crucial to understand how different features of metaverse-like spaces affect youth engagement and how specific experiences and backgrounds influence mental health risks. This will help identify vulnerable populations and thriving communities online, allowing for targeted interventions and support systems.
- **Facilitating research:** It is critical for tech and gaming companies to work with independent research groups in order to understand the effects of digital spaces on mental health. These collaborations can be encouraged through funding opportunities and platforms that make data available to researchers.
- **Designing for diversity:** Metaverse-like spaces should be designed with consideration for the immense variety among youth, including their ages, lived experiences, cultures, identities, motivations, resources, and expertise. By accommodating this diversity, platforms can both foster inclusivity and create spaces that cater to the unique needs and preferences of different youth populations.
- **Exploring long-term impact:** Understanding how pre-teen experiences in metaverse-like spaces may affect their mental health as teenagers can inform strategies for early intervention and support, ultimately promoting healthy online and offline development.
- **Encouraging supportive behaviors:** Youth engage in a wide range of supportive behaviors online that have the potential to promote their well-being. By identifying and amplifying these positive interactions, platforms can contribute to the mental health and resilience of young users. Encouraging and supporting youth to engage in such behaviors can help create a positive and nurturing online environment.
- **Engaging at multiple levels:** Policymakers, metaverse developers, researchers, foundations, caregivers, health-care professionals, community organizations, influencers, educators, and young people all play vital roles in counteracting risks and amplifying the advantages of engagement in digital spaces. Collaboration among these stakeholders can lead to effective strategies and policies that prioritize youth well-being.

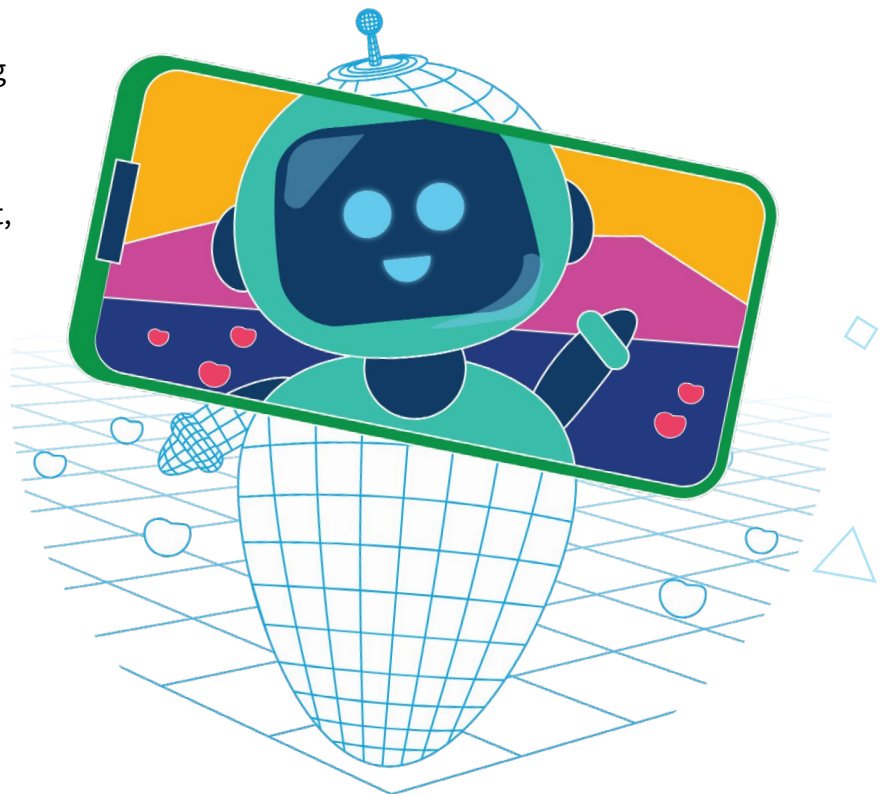
- **Cultivating self-awareness and self-regulation:** A consistent imperative arising from the literature review is the need to foster self-awareness and self-regulation in youth at earlier ages than previously considered necessary. Teaching life skills for engaging with these platforms can empower youth to navigate them in a healthy and responsible manner.
- **Leveraging youth expertise:** Including youth in research, policy development, and platform-design processes enhances the relevance and effectiveness of interventions and ensures that the perspectives of young users are adequately considered.
- **Empowering youth as agents of change:** Educating young people about the potential for harm in digital spaces can help them develop strategies to protect themselves. Young leaders and influencers in metaverse-like spaces can also become agents of change, actively fighting against violence, negative content, and other harmful aspects, and contributing to a safer and healthier online environment.
- **Translating online skills to offline interactions:** Understanding how online experiences can positively influence real-world interactions can inform interventions that promote social skills, empathy, critical thinking, and resilience among young individuals.
- **Addressing common challenges:** Metaverse-like spaces pose challenges—including practices that prey on our biases, misinformation, and deep fakes—that even adults struggle with. Recognizing and addressing these challenges in the context of youth mental health can help foster media literacy, critical thinking, and digital citizenship skills among young users.

Additional Considerations: AI and Metaverse

Although not a core focus of this project, we also considered the implications of emerging artificial intelligence technologies, such as chatbots and generative AI, and the complexities they can add when they are integrated into a metaverse platform.

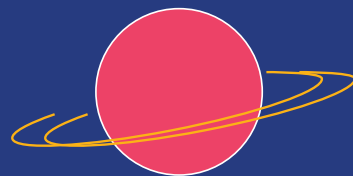
Despite the potential benefits of AI, the Advisory Group identified several use cases that may elevate risks to young people, including:

- AI algorithms in a metaverse can be designed to manipulate emotions and behavior through targeted advertising, promotion of unhealthy online behaviors, and the reinforcement of harmful thoughts or beliefs.
- AI-powered chatbots or virtual characters may be designed to target and bully users.
- AI technologies in metaverse spaces may depict, revert to, and reinforce idealized and unrealistic body images, causing social comparison.
- Excessive engagement in AI interactions in a metaverse may lead to reduced human social interactions and increased feelings of loneliness and isolation.
- AI technologies create opportunities for “interaction opacity,” where young people in a metaverse may not be able to determine whether they are interacting with a human or a chatbot, amplifying risks related to manipulation and exploitation.



Recommendations

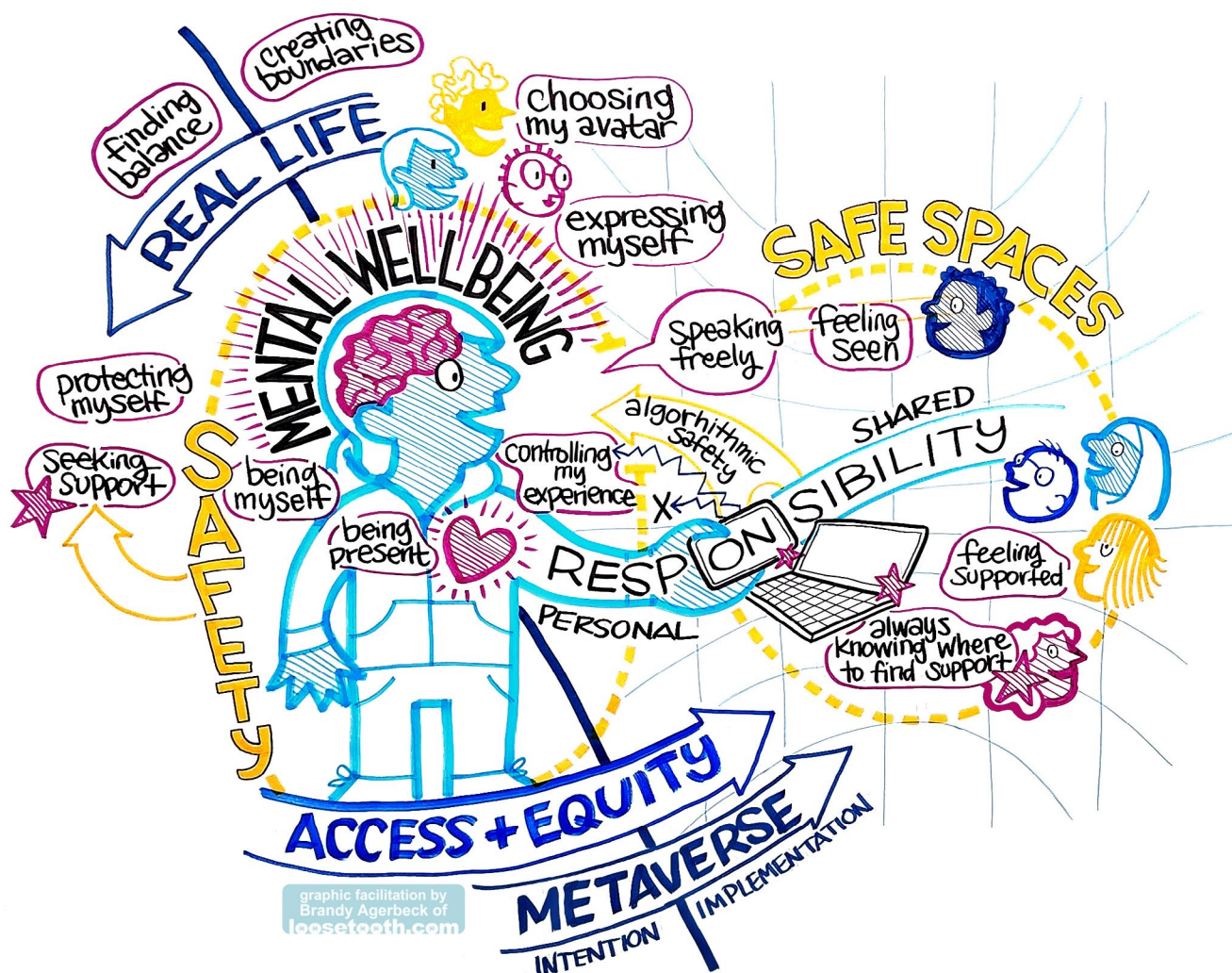
for Youth-Centered Strategies to Ensure and Enhance the Mental Health and Safety of Young People in Metaverse Spaces



Centering Youth

The bulk of existing recommendations related to youth mental health in digital and metaverse-like spaces has been framed through a more traditional lens of user experience and relevance, with a focus on factors that may be protective or fuel engagement. User-centered design, for instance, allows young people to contribute to shaping the digital environments they inhabit, but underlying drivers may exacerbate—rather than mitigate—the risks identified in the literature review.

In this examination, the Advisory Board identified an urgent need for recommendations to fully center youth, asking the question: What do youth have the right to expect from the metaverse when it comes to their mental health and well-being?



The Rights of Youth in a Metaverse Ecosystem

In extensive collaboration with the Advisory Board and with input and review from our Youth Advisory Board, we have created the following list of rights to which youth are entitled:

- **Safety:** Inclusive, supportive spaces where their psychological safety is prioritized. Ground rules, expectations, and community standards should be established and clearly communicated to ensure safety, encompassing psychological, physical, and financial aspects.
- **Understanding:** All spaces and products should be designed to state up front what content is not allowed and the procedures for reporting offensive content or actions, including what steps will be taken and the ability to report positive experiences as well. Agreements and user codes of conduct should be explicit and well defined before youth enter the space.
- **Mental health promotion and support:** Developers, in partnership with mental health experts, should develop accurate, evidence-based wellness content and tools. Those tools should include mechanisms for young people to monitor and check in on their mental health during their metaverse engagement, access to accurate and evidence-based mental health information, and clear channels through which they can access third-party mental health support.
- **Inclusion and belonging:** Young people should have the freedom to be their authentic selves and feel a sense of belonging in the metaverse. Freedom from hate and harassment should be ensured, and diversity, equity, and inclusion should be promoted, particularly regarding disability.
- **Privacy:** Young people should have control and ownership of their own data and privacy. They have the right to be free from exploitation, such as ad targeting or manipulation without consent and understanding. Their shared information should not be used against them, particularly by governmental entities tracking their movements or activities.
- **Control and creativity:** Young people should have agency over their content, including:
 - The ability to shape their experience.
 - Access to mechanisms for speaking up and co-creating or co-designing the community.
 - Developmentally appropriate experiences, including, where appropriate, the choice between age-banded or intergenerational spaces.
 - Opportunities for meaningful contributions, playfulness, creativity, and exploration.
 - The ability, clearly outlined, to retain creative control and ownership of their intellectual property created within the space.

Key Opportunities and Areas of Leverage

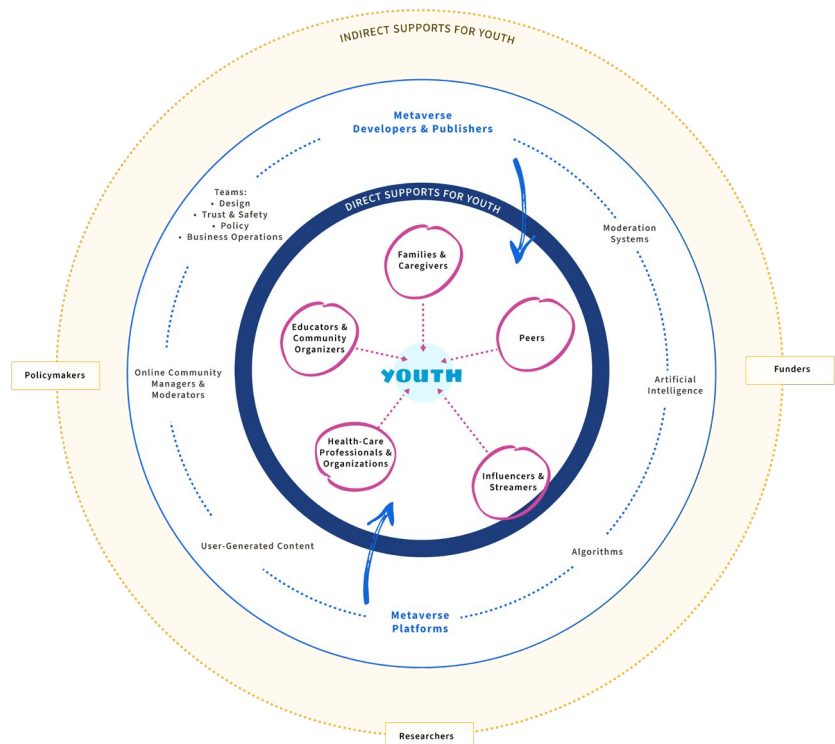
Metaverse-like spaces involve multiple stakeholders with intersecting—and sometimes competing—values and priorities, many of which impact youth mental health. Youth live in an ecosystem that includes:

- Direct supports, such as their families, friends, peers, educators, and counselors.
- Indirect supports, such as policymakers, researchers, and funders.
- Influencers and metaverse developers and publishers with whom youth interact directly and who determine the digital landscapes in which they live, work, and play.

The efforts of each group are different, but they intersect with and build on one another. In their analysis, the Advisory Board sought to identify and leverage these points of intersection to drive meaningful change. They highlighted opportunities to maximize synergies, optimization, and scalability, while recognizing that the stakeholders at the outer rungs have the most leverage to shape the system.

Model of a Youth-Centered Metaverse Ecosystem

Through the process of mapping stakeholders, actions, and interactions, this youth-centered ecosystem (as depicted to the right) provides a foundation to develop recommendations that leverage both these points of connection and the Rights of Youth in a Metaverse Ecosystem, outlined above.



We All Have a Role to Play: Recommendations for a Safer Metaverse

Drawing upon a deep understanding of the challenges and opportunities presented by metaverse-like spaces, these recommendations were developed to provide actionable guidance for stakeholders in fostering a metaverse future that prioritizes the mental health and well-being of young people. Although specifically organized by stakeholder groups, all recommendations are grounded in the Rights of Youth in a Metaverse Ecosystem framework and designed to leverage key areas of collaboration.

What Policymakers and Regulators Can Do

Support federal regulation designed to assure metaverse user safety, especially for youth, including preventing online platforms from employing technologies that drive nonstop engagement, online spending, or risky interactions for users under age 16. Specifically: preventing the use of video autoplay, platform-generated messages or alerts (e.g., push notifications), engagement-based rewards, and enticements and algorithmic preferences to share personal information or maximize money spent on platforms.

Establish and require a minimum set of safety standards, such as those currently in effect through the Online Safety Bill in the U.K. and California's transparency law, which provide basic guidelines for preventing harm and responding to users in distress. The standards should also address platform use of "dark patterns" that subtly direct users into behaviors and actions that are beneficial to the platform's business while disregarding—and potentially harming—users. It is also essential for all metaverse platforms to regularly and carefully flag content that is harmful or potentially harmful to users' safety and health. Examples include messages or posts that mention suicide, death, or wanting to die; feelings of hopelessness, rage, or being a burden to others; or withdrawal from everyday activity.

Additionally, since users are often quite savvy about circumventing platform protections, platforms must remain vigilant about and dynamically responsive to morphing user efforts to get around protections. These efforts are also complicated by the fact that many users with a history of experiences that may be triggering to others, such as self-injury or disordered eating, share healing stories



and creative expression of their experiences to offer social support to others. That can be useful, but it makes efforts to monitor content more challenging. The ability to quickly catch and respond to harmful content while also supporting valuable and helpful content and user exchange must be prioritized. All platforms must be vigilant in assuring that mental health resources and crisis lines are prominently offered to users identified as vulnerable.

Support creation of a commission and advisory council, with regular reporting. The commission should center child well-being over profit by limiting disclosure and data sharing to third parties and designating users between age 13 (the age youth are technically allowed on social media) and 17 (the end of legal childhood, last day of age 17) as a special class.

Mandate collaboration between technology companies and independent research teams by stipulating conditions under which researchers can access metaverse platform data and algorithms. Understanding the complex interaction between users and platform use requires metadata that metaverse companies possess and that is largely impossible to generate without platform cooperation. Of specific interest are the user data and algorithms platforms use to cater to and direct user attention.



Understanding the effects of attention “nudges” on platform-level behavior (and cross-platform data sharing and behavior), especially the impact on vulnerable users, is critical in designing effective approaches for reducing possible harm. Researchers must be able to conduct longitudinal and real-time studies to understand and map the user by technology interactions that affect mental health vulnerability. This requires an added level of collaboration between technology companies and independent research groups.



Require metaverse development companies to include experts such as psychologists, ethicists, and medical and public health professionals on industry advisory bodies to advocate for youth well-being. Technology companies should include consumer advocates and researchers in ways that protect proprietary knowledge while simultaneously permitting input, insight, and research that safeguards youth and public well-being. To anticipate and mitigate possible harms, companies should involve those professionals before and during the design and deployment of features and algorithms to robustly and fairly evaluate their developmental and mental health impacts. Such collaboration would signal alignment between the interests of platform developers and the public good—an alignment that may have broad collateral benefits to the industry and public.



Mandate development and deployment of software that accurately detects user age and governs graduated affordances by age on metaverse platforms. Platforms must do a better job of guaranteeing that users below the designated age of access (typically age 13) are barred from accessing



the platform. Platforms also must develop effective methods for restricting access to more mature content and limiting targeted advertisements or detrimental attention “nudges” by user age once they are on the platform. In the social media space, for example, much of the content that appears in Instagram’s Explore section is generated on the back end based on the individual user’s engagement and interests within the platform. Although it creates a more individualized and preferred experience for the user, this logic is not advisable for more vulnerable populations, particularly minors. Safety features should supersede user-preferred content for users under 18.

What Metaverse Developers and Publishers Can Do

Actively design for digital thriving, an approach that bakes safety, prosocial interaction, and positive modeling into the design of online spaces, games, and platforms. It acknowledges that every choice about a digital space—from AI to norms to graphics—impacts every user’s experience. Considering the needs, desires, interests, and safety of the largest number of users will create the best spaces, creating more effectively self-moderated and self-reinforcing experiences.

Aggressively remove or moderate harmful content, including content related to eating disorders; self-injurious thoughts and behaviors; racism; misogyny; and content glorifying violence against marginalized people.

Aggressively remove or moderate harmful behavior, including content that engages in cyberbullying, hate speech, sexual harassment, and extremism.



Adopt new incentives to drive business-model and design innovation. Although there is incentive for metaverse developers and publishers to reduce harmful content or moderate harmful behavior, business models that prioritize profit and rely on speed to market or advertising revenues—which are often dependent on prolonged engagement, increased clicks, and the collection and sale of user data—can result in significant gaps between economic and social priorities.

Make data available to researchers. Without data, researchers, regulators, media, caregivers, and educators are left with little useful information or context upon which to base their assumptions, decisions, and narratives. Empowering both designers and youth requires that we arm them with an accurate understanding of how these spaces function, the experience of inhabiting them, and what the concerns should—or should not—be.



Rethink parental controls. Research shows that many adolescents, especially those growing up in low-income households, are less likely to have their online environments tailored and protected by adults. Parental controls as they are currently designed work only when a parent or other caring adult is around to use them. These youth instead rely on peers and older siblings to help them learn the ropes of online play.





Balance policing and surveillance of platform content and behavior with scaffolding and supporting it. Adolescents are more likely to break rules than other age groups, but they can learn from their mistakes when supported in the right ways. Most youth are willing to step in and help when they see harmful content or behavior, but they often don't know how to do so—especially in metaverse gaming. We need to build environments that let youth fail in ways that keep them safe but also provide context for learning how to resolve conflict, solve problems, and interact with a diverse set of people.

Acknowledge the expertise of youth and provide genuine opportunities for their voices to be heard. Opportunities include engaging youth advisory boards and ensuring they have true agency and influence.

What Researchers Can Do

There is a general need to scrutinize youth metaverse use—the features of the platforms, the ways in which youth engage with them, and the experiences and backgrounds they bring to the platform—so we may better understand not only the associated risks to mental health, but also opportunities for positive development. Data sharing and accessibility will be paramount to adequately understanding the landscape, its impact, and the potential solutions.

Focus research in the most critical areas, deepening our understanding of:

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- How youth pre-teen experiences with metaverse-like spaces may affect their mental health as teenagers.
 - The effects of predatory online marketing practices on youth mental health, particularly in the clinical psychology space.
 - The benefits of participation in metaverse spaces that can serve as affinity networks—both intentionally and unintentionally.
 - The identification of youth vulnerabilities and assets that may influence problematic or healthy digital engagement.
 - Age guidelines for initiating digital literacy programs, including key literacy domains by age or developmental stage.
 - The effects of full sensory immersion (VR) on all core youth functioning domains: sense of self, sense of safety, mental and emotional health and function, and social health (the health of offline and online social engagement and capacity).
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Develop a greater range of research-practice partnerships focused on bridging the gap between academic research and its practical application in industry contexts. Specifically, these partnerships would help us understand:

- What usage patterns exist and how they differ across various demographics.
- Where issues of safety, harassment, extremist behavior, and other forms of harm are most frequent, impactful, or visible.
- What mechanisms are most effective in reducing and mitigating the impact of harm, and supporting positive behavior changes or outcomes.

What Funders and Foundations Can Do

Fast-track metaverse literacy and online safety education programs. Encourage academic and clinical collaborations that can quickly provide community organizations and initiatives with the information they need to speed the distribution of educational resources and provide support and guidance to youth and their caregivers.

Invest in research. Provide grants and funding opportunities to support research that explores the impact of metaverse spaces on youth mental health.

Foster collaboration between stakeholders. Opportunities include funding research partnerships; encouraging partnerships between academic researchers and industry practitioners to bridge the gap between research and practical application; supporting platforms that make data available to researchers; exploring mechanisms to incentivize collaborations; and facilitating communication and knowledge exchange by creating neutral platforms for sharing best practices and research findings, fostering dialogue, and promoting collaboration.

Engage youth in decision-making. Integrate advisory boards or other mechanisms that allow young people to contribute their perspectives and insights to funding decisions that address issues related to the mental health and well-being of young people in metaverse-like spaces.

What Caregivers Can Do

Set and enforce healthy sleep schedules. Research shows that one of the ways being online harms mental health is that it interferes with good sleep, which is foundational to brain development and physical and mental health. Sleep-deprived teens are at increased risk for depression, anxiety, accidents, injuries, difficulty in school, and even suicidality.

Since their brains are developing and apps and devices are designed to promote constant engagement, it is difficult for children and teens to regulate their screen use. That is why caregivers should play an active role in helping them set boundaries. Here are three ways caregivers can do that:

- **Use [agreements and contracts](#)** to establish limits and healthy behaviors. Written contracts—revisited as a child ages—should include summaries of agreements, including consequences of breaches.
- **Employ parental controls** through devices, routers, apps, and cell phone providers.
- **Create rules around screens and bedtime**, such as not allowing devices in bedrooms or setting a time that all devices must be out of rooms or powered down so children can get the [recommended amount of sleep for their age](#).

Educate themselves and their family about guardrails to healthier and safer metaverse use. Ideally it would occur before children go online, but it is important at any time. A growing number of digital-literacy tools related to the metaverse, such as those provided by [Cyberwise](#), [Common Sense Media](#), [Family Online Safety Institute](#), and [Edutopia](#)—support users and caregivers in learning how to:

- Create accounts
- Post safely
- Minimize risk and maximize benefits
- Contribute to positive platform norms
- Recognize and deal with harassment
- Develop healthy engagement habits

Know the metaverse landscapes family members frequent. It can be challenging to stay on top of new platforms, apps, and game sites, but it's important to know where youth go and what they encounter. Caregivers should demonstrate interest in what youth are doing online and involve them in conversations about preferences, habits, experiences, and perceived pros and cons.

Talk about how their metaverse use makes them feel. Ask how youth feel after engaging with different online experiences. Which activities or platforms feel enjoyable, relaxing, or informative? Do some depress their mood or leave them tired, agitated, or with a low sense of themselves? Helping young people recognize red-flag feelings that indicate their mental health is being negatively affected or they could be in danger is a critical part of helping them develop a healthy relationship with technology.

Engage in play and metaverse time with family. Playing and spending time together online is one of the most powerful ways family members and caregivers can develop a shared understanding of why and how young people use metaverse spaces. Engaging in cooperative and positive ways enables caregivers to identify potential red flags, build an understanding of youth's motivations for using these spaces, and have more productive conversations and negotiations around metaverse use.

What Health-Care Organizations and Health Professionals Can Do

Develop or distribute materials and resource guides for caregivers that include information regarding metaverse use. Nearly every family is working to understand how to balance online and offline experiences in a way that maximizes benefits and minimizes risks for young people. Health-care organizations are well positioned to help their members understand how to keep children safe, recognize warning signs, identify helpful healthy-use resources, and share guidance on how to establish and constructively enforce healthy boundaries.

What Community Organizations Can Do

Develop or distribute materials and resource guides for caregivers that include information regarding metaverse use. Youth-serving community organizations can provide direct or indirect education for both youth in their care and caregivers. Like schools, they may offer programming directly to youth on safe and healthy use of metaverse spaces or tips and techniques through newsletters or other information-focused bulletins, such as newsletters and online resources.

Offer digital-literacy and online-safety education programming that includes metaverse use.

Community organizations that work directly with youth can engage them in structured digital literacy programming. An increasing number of predeveloped offerings exist for this purpose. More informally, community organizations can initiate conversations with youth participants about recognizing risk, creating positive norms in social spaces, and looking out for others. Such conversations can be accompanied by resources for young people to take home and share with their caregivers.

What Influencers Can Do

Harness their power to advance youth mental health by learning how to mindfully share mental health stories and respond to followers who share theirs, and knowing where to refer followers who may be facing significant challenges.

Facilitate and create healthy digital and metaverse communities by educating themselves on moderation, safety tools, responsible advocacy, and the use of their platform to advocate for others.

Support and encourage positive digital use and evidence-based healthy habits, including creating positive online norms, looking out for others in their online communities, and sharing tips and techniques for successfully balancing online and offline life.

What Educators, School Staff, and School Districts Can Do

Build digital-literacy skills that include metaverse use in the curriculum. Ensure current programs and curricula include currently available information on navigating these additional complex environments.

Support digital literacy for caregivers. The generational digital divide is real, and many caregivers are ill-equipped to enact even the most basic recommendations for caregivers. Schools can play an important role in alerting caregivers to the importance of family digital-use plans, helping them create family agreements, identifying key resources (e.g. digital-literacy tools), and assisting them in developing healthy youth digital-use strategies such as setting and enforcing healthy sleep hygiene agreements, having hard conversations, and monitoring techniques that do not become power struggles. Caregivers also need help to know what apps, platforms, and games are popular; what they need to look out for in their youth; what they should do if they are concerned; and how to identify and use parental restrictions as needed.

Recognize both the harms and benefits of metaverse spaces. Youth engage in metaverse spaces for a range of reasons, most of which are positive and reinforce social bonds, a sense of belonging, and other important needs. Understanding and honoring the reasons youth spend time in online spaces is essential to supporting them.

Create clear guidelines for responding to online harassment. One of the greatest challenges schools face is managing negative online interaction between students, since most of it happens off campus and outside of school hours. Adopting clear guidelines, ensuring students are aware of school policies, and enforcing consequences as cases arise are all paramount for ensuring a safe and healthy school environment. Protocols that prioritize healing harm and providing opportunities for repair, apology, and growth address both current and future behavior and model health approaches to harm.

What Young People Can Do

Prioritize sleep. Interference with sleep is one of the most powerful ways digital technology negatively impacts mental health. Make sleep a priority by disengaging at least an hour before bedtime and assuring that all devices are powered down or silenced.

Learn how to stay safe online. Being online and with others is fun, but it brings risks. It is important for youth to work actively with trusted adults in their lives to identify the particular risks they may face online and the signs to watch for.



Be savvy consumers by evaluating online interactions and relationships with a critical eye toward the motivations of people with whom they interact in a metaverse space, as well as learning about the role AI-powered chatbots play.

Learn to recognize internal red-flag feelings that tell them their online activities are unsafe or negatively affecting them.

Use self-regulation tools to support a healthy balance between online and offline life. Tools for supporting healthy engagement are an increasingly common part of platforms, devices, and routers. Youth can use them to set time limits, discourage use during dedicated school or work hours, and support personal digital media-engagement goals.

Identify what they need from online spaces and advocate for those needs through codesign, advocacy, or activism.

Support peers in online networks. Whether by listening to, advocating for, or connecting a peer to a trusted resource or alerting an adult when they are concerned, youth should find ways to support online peers.

Conclusion

As the U.S. Surgeon General pointed out in his advisory on [youth mental health and social media](#), our country has a history of effectively protecting the safety and well-being of youth by employing a “safety first” approach to areas such as vehicle and toy safety. As a nation, we prioritized consumer safety by mobilizing a group of stakeholders composed of legislators, scientists, advocates, and consumer-education organizations. They demanded and executed rigorous research, created recommendations based on those findings, established regulations that hold manufacturers and designers to account, and launched extensive consumer-education campaigns to ensure changes in consumer behavior—all to safeguard the health and save the lives of youth.

The time has come to apply this comprehensive approach to digital spaces, digging in to do the important work of protecting and promoting the mental health of youth in the places where they spend much of their lives. It is not only the right thing to do and consistent with our values as a society, but also an imperative dictated by the current state of youth mental health.

We have an obligation to protect and build up the next generation, and that means investigating and improving the experiences that directly impact their development and journey into adulthood. That applies to all social media and online experiences, but this research is focused on the emerging metaverses, which bring a new, complex, and challenging layer to the work.

This report has sought to identify what we know, what we still need to learn, and how to move forward on both fronts. We hope our recommendations provide a framework for stakeholders to start taking action.

Ideally, this work will serve as a roadmap for protecting and promoting youth mental health online. We have the privilege and responsibility to enhance what is beneficial, minimize or eliminate what is harmful, and help create a positive, growth-focused metaverse experience with and for youth. And they have the right to expect it.

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About The Jed Foundation (JED)

JED is a nonprofit that protects emotional health and prevents suicide for our nation's teens and young adults. We're partnering with high schools and colleges to strengthen their mental health, substance misuse, and suicide prevention programs and systems. We're equipping teens and young adults with the skills and knowledge to help themselves and each other. We're encouraging community awareness, understanding, and action for young adult mental health.

Connect with JED! [Email](#) | [Twitter](#) | [Facebook](#) | [Instagram](#) | [YouTube](#) | [LinkedIn](#) | [Snapchat](#) | [Pinterest](#) | [TikTok](#)

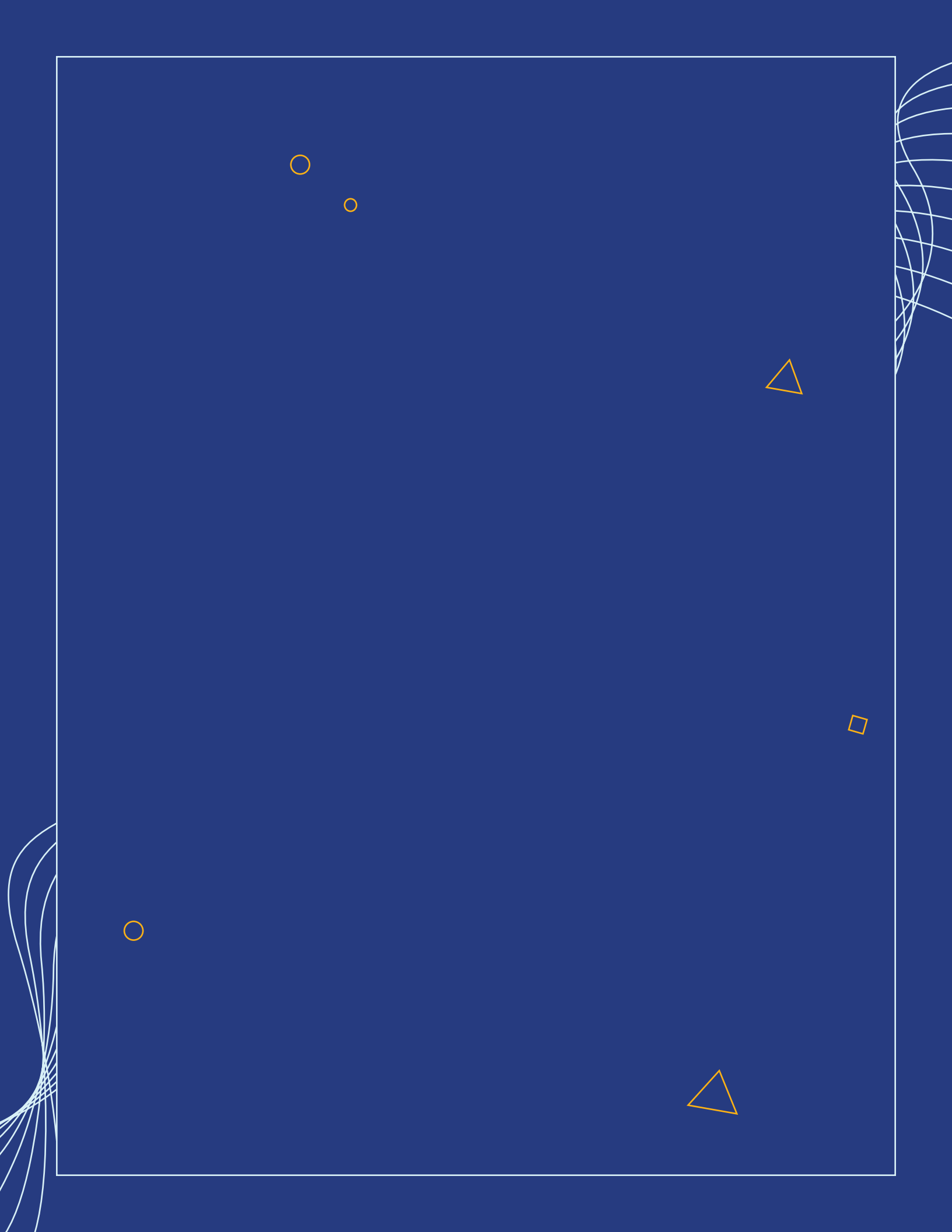
About Raising Good Gamers (RGG)

RGG was founded by Games for Change and the Connected Learning Lab at the University of California, Irvine, in 2020. Now, in partnership between Take This and Games for Change, the initiative aims to create a sustainable movement that can change the culture of online gaming for everyone. Working with a cross-sector community including designers, technologists, activists, researchers, funders, academics, parents, educators, and youth, RGG focuses on how we can develop and support gaming communities that cultivate empathetic, compassionate, and civically engaged kids.

About Connected Learning Labs at the University of California, Irvine

The Connected Learning Lab at the University of California, Irvine, is an interdisciplinary research institute dedicated to studying, designing, and mobilizing digital technology in youth-centered and equitable ways.





APPENDIX A:

Metaverse Interdisciplinary Advisory Board Participants

- Sun Joo (Grace) Ahn, PhD, Founding Director of the Games and Virtual Environments Lab of the Grady College of Journalism and Mass Communication, University of Georgia
- Monica Ann Arrambide, CEO and Founder, Maven Youth
- Jeremy Bailenson, PhD, Courtesy Professor of Education and Program in Symbolic Systems, Stanford Graduate School of Education
- Jakki Bailey, PhD, Assistant Professor, University of Texas, Austin
- Rebecca Benghiat, JD, President and Chief Operating Officer, The Jed Foundation
- Eve Crevoshay, Executive Director, Take This
- Mark DeLoura, Games and Education Technology Consultant, Level Up Games
- Tanya DePass, Founder and Director, I Need Diverse Games
- Ashley Elliott, PsyD, Owner and Lead Consultant, Vivid Innovations Consulting, LLC
- Laura Erickson-Schroth, MD, MA, Chief Medical Officer, The Jed Foundation
- Carlos Figueiredo, Director of Player Safety, Minecraft; Executive Director and Co-founder, Fair Play Alliance
- Kishonna L. Gray, PhD, Associate Professor in Writing, Rhetoric, and Digital Studies, University of Kentucky
- Weszt Hart, Head of Player Dynamics, Riot Games
- Celia Hodent, PhD, Founder, Ethical Games
- Jennie Ito, PhD, Senior Product Policy Manager, Roblox
- Jay Justice, editor, game developer, consultant, and cosplayer from New York City
- Daniel Kelley, MFA, Director of Strategy and Operations, Center for Technology and Society at the Anti-Defamation League
- David Kleeman, Senior Vice President of Global Trends, Dubit
- Raph Koster, MFA, CEO, Playable Worlds
- Rachel Kowert, PhD, Research Director, Take This
- Amanda Lenhart, Head of Research, Common Sense Media

- Remy Malan, Vice President of Public Affairs and Chief Privacy Officer, Roblox
- Michael P. Milham, MD, PhD, Vice President and Director of Research, Child Mind Institute
- Alex Newhouse, MA, MS, Senior Research Fellow of the Center on Terrorism, Extremism, and Counterterrorism; Middlebury Institute of International Studies at Monterey
- Brian Nowak, Managing Director, U.S. Internet Research, Morgan Stanley
- Mike Pappas, CEO and Co-founder, Modulate
- Susanna Pollack, President, Games for Change
- Michael Preston, PhD, Senior Vice President and Executive Director, Joan Ganz Cooney Center, Sesame Workshop
- Stephen Schueller, PhD, Executive Director, One Mind PsyberGuide
- Petr Slovak, PhD, Senior Lecturer in Human Computer Interaction and UKRI Future Leaders Fellow at the Department of Informatics, King's College, London
- Jessica Stone, PhD, RPT-S, clinical psychologist and mental health virtual reality specialist; Co-creator, CEO, and CPO, Virtual Sandtray, LLC
- Tiera Tanksley, PhD, Assistant Professor of Diversity, Equity, and Justice in Education, University of Colorado, Boulder
- Katie Salen Tekinbaş, Professor of Informatics, University of California, Irvine, Connected Learning Lab; Organizer, Raising Good Gamers
- Dawn Thomsen, Senior Vice President of Youth Strategies and Chief Engagement Officer, The Jed Foundation
- Rachelle Vallon, Middle School Guidance Counselor and Wellness Coordinator, Quest to Learn
- Janis Whitlock, PhD, MPH, psychologist, Emerita Research Scientist, Cornell University; Senior Advisor, The Jed Foundation

APPENDIX B:

Youth, Mental Health, and the Metaverse Literature Review Research Framework (Salen et al, 2023)

Risk and protective factors for youth mental health are displayed within three domains: individual, interpersonal, community

Risks

Individual Risks	Research Questions
Identity	What does the research on youth mental health have to say about risks associated with the digital representation of self in metaverse-like environments? How might such risks be mitigated?
Maladaptive use	What does the research on youth mental health have to say about maladaptive use associated with behaviors in metaverse-like environments? How might such risks be mitigated?
Age-appropriate content	What does the research on youth mental health have to say about risks associated with age-appropriate content in metaverse-like environments? How might such risks be mitigated?
Interpersonal Risks	Research Questions
Social isolation/loneliness	What does the research on youth mental health have to say about risks associated with social isolation in metaverse-like environments? How might such risks be mitigated?
Predatory behavior	What does the research on youth mental health have to say about risks associated with predatory behavior in metaverse-like environments? How might such risks be mitigated?
Bullying/harassment/assault	What does the research on youth mental health have to say about risks associated with bullying and harassment in metaverse-like environments? How might such risks be mitigated?

Community Risks	Research Questions
Exploitation	What does the research on youth mental health have to say about risks associated with exploitation in metaverse-like environments? How might such risks be mitigated?
Disparities/equity	What does the research on youth mental health have to say about risks associated with inequity and exclusion? What does the research say about ways in which metaverse-like environments might create disparities among young users or exacerbate inequities?

Protective Factors

Individual Protective Factors	Research Questions
Positive physical development	In what ways might participation in the metaverse affect young people's physical development (positively or negatively)?
Academic achievement/intellectual development	In what ways might participation in the metaverse affect young people's academic achievement/intellectual development (positively or negatively)?
High self-esteem	In what ways might participation in the metaverse support or hinder young people's self-esteem?
Emotional self-regulation	In what ways might participation in the metaverse support or hinder young people's emotional self-regulation?
Good coping skills and problem-solving skills	In what ways might participation in the metaverse help or hinder youth in developing coping and problem-solving skills?
Engagement and connections in two or more of the following contexts: school, with peers, in athletics, employment, religion, culture	In what ways might participation in the metaverse enable or hinder engagement and connection between two or more of the following contexts: school, with peers, in athletics, employment, religion, culture?

Interpersonal Protective Factors	Research Questions
Family provides structure, limits, rules, monitoring, and predictability	What do we know about ways families can provide structure, limits, rules, monitoring and predictability around young people's participation in the metaverse, or with digital media more broadly?
Family provides fact-based information and support	What do we know about the importance of families providing youth with fact-based information and support about the risks and opportunities associated with their children's participation in the metaverse?
Supportive relationships with family members	What do we know about the kinds of supportive relationships young people need with family members around their use of digital media, and in particular participation in virtual worlds? What factors influence or hinder the development of such relationships?
Clear expectations for behavior and values	What do we know about ways families can set clear expectations for behavior and values around young people's engagement with metaverse-like experiences?
Community Protective Factors	Research Questions
Presence of mentors and support for development of skills and interests	What do we know about the role of mentors in metaverse-like experiences in supporting the development of young people's skills and interests? What makes such relationships helpful or harmful?
Opportunities for engagement within the community	What kinds of opportunities for engagement within a community might young people have in the metaverse? What kinds of things facilitate or hinder such engagement?
Positive norms	What do positive norms in the metaverse look like? How are they created and reinforced?
Clear expectations for behavior	What do we know about how communities (online and offline) can set clear expectations for behavior by young people in metaverse-like environments and experiences?
Physical and psychological safety	What do you know about the potential risks and opportunities afforded by metaverse-like environments around young people's physical and psychological safety?

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