

Article

Video Games and the COVID-19 Pandemic: Virtual Worlds as New Playgrounds and Training Spaces

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Abstract: The COVID-19 pandemic forced the authorities to take an unprecedented measure in history: the house confinement of millions of people worldwide. Video games, especially open-world video games (OWVGs), became meeting spaces, a digital places to play, chat, learn and socialize due to the context of the health crisis, respecting the rules of social distancing. This article analyses the role of video games and, more specifically, OWVGs, as playgrounds and training spaces during the pandemic. Statistical data and analyses carried out by consulting companies and civil associations show the definitive insertion of these video games in our routine and social relations. The challenge is to take advantage of the skills and abilities that these video games develop within a new framework of individual and community learning. The conclusions of the research show that the virtual worlds of video games are for the new digital society, safe and comfortable meeting spaces, and that since the confinement, these digital places have greatly expanded their reach, previously only limited to the gamer community.

Keywords: virtual worlds; video games; players statistics; COVID-19 lockdown; digital–real crossovers; digital society



Citation: Somoza Medina, X.; Somoza Medina, M. Video Games and the COVID-19 Pandemic: Virtual Worlds as New Playgrounds and Training Spaces. *COVID* **2024**, *4*, 1–12. <https://doi.org/10.3390/covid4010001>

Academic Editors: Andrea Fiorillo and Luigi Vimercati

Received: 30 October 2023

Revised: 4 December 2023

Accepted: 18 December 2023

Published: 19 December 2023



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1. Introduction

Vulnerability, hazard, or resilience are words that rarely appear in the scripts of video games, and yet the imaginary dystopian and apocalyptic landscapes of a good few of these games transport us into environments where such concepts are highly applicable. Vulnerability manifests itself in the unstable socio-ecological systems of post-apocalyptic video game worlds [1]. These worlds have undergone some crisis that means society must start anew, and the game is set in the ruins of our or other civilizations, and generally, destruction prevails over construction [2]. Thus, people who play these games find themselves in worlds that have succumbed to some type of threat and display their mortal wounds in the form of demolished buildings and derelict industries. Hazards, meanwhile, take the form of deadly storms, earthquakes, volcanoes, or epidemics, such that players have a heightened awareness of risk, knowing that, at any moment, a devastating catastrophe could happen. The frenetic rhythm of the action in these games only adds to the constant sense of risk. The apocalyptic story and gameplay are based on the adaptation of the characters and the player to a new setting. In these game worlds vulnerable to all manner of hazards, resilience, understood as the ability to adapt to changing circumstances, becomes one of the key skills necessary to succeed.

The influence of video games on player resilience is the topic of Tichon and Mavin's 2017 study [3]. These authors analyzed players' comments posted on the PlayStation Network (an online community for gamers) and used structured interviews to assess how players' perceptions of their emotions and self-confidence might have altered as a result of gaming. In a similar vein, Jane McGonigal defends the idea of building resilience by

'wasting' time with video games [4], and Jesper Juul [5] argues that games motivate us to play more in order to escape our continuous errors. Players need to improve their skills to escape failure, so the central enjoyment of games is the art of failure [6].

Environmental hazards and the perception of vulnerability generate a sense of risk that contrasts with the idealized design of the environments in which the characters move when the action allows us to contemplate the horizons. Thus, the scenarios of these games unfold in idealized, bucolic landscapes designed to enhance the player's experience [7]. Shaw and Warf have defined these video game landscapes as Worlds of Affect, describing how they are specifically aimed at generating predominantly affirming, positive gaming experiences [8]. Gordon Calleja [9], in his work, describes the immersion possibilities offered by video games, defined as a player's sensation of inhabiting the space represented onscreen towards a new concept of incorporation, where the intensity and internalization of the game experience is total.

Open-world video games (OWVGs) are a type of video game in which the gamer can enter different landscapes while advancing in the game through a realistic open-world space, to the extent that some even consider it as the prototype of the virtual world and the Metaverse [10]. OWVGs have been analyzed in their spatial aspects in some recent articles of great interest [11–13]. However, there is no unanimity regarding the name of these imagined computer-processed territories [14]. Sometimes, the name "video game spaces" is simply used [15]; in others, the concept is more complex: half-real [5] or trans-reality [16]. In this article, the term virtual worlds is used [17].

Miguel Sicart [18] argues that playing games is a way of being in the world, that playing is a natural characteristic of human beings and a form of understanding the world around us. Play is a way of engaging with others, and the rules create a context that we can negotiate and modify. Play goes beyond games, especially in our childhood, but time spent with toys and in playgrounds is increasingly reduced due to our way of life. This is perhaps the gap that video games have come to fill. At the present time, gaming, in any format, has reached a prominence in our lives as never before. Bearing in mind Sicart's assertions about playing and understanding the world, the characteristics of video games have interesting learning potential. Video game players are simultaneously conscious of the reality of the virtual worlds and of the virtuality of the everyday landscape; thus, behavior learned in virtual environments can influence action in the real world [5,19]. This feature has many applications and has been investigated in the area of environmentalism and sustainability [20,21]. Ash [22] argues for a dual conception of the "space" of screened images, using video games as an exemplar of how this can alter users' spatial awareness of the world.

This discussion gained a new dimension in March 2020, when countries across the world placed their populations under strict quarantines. While gamers played in front of their screens, fighting to save the world or their lives from the comfort of their homes, the stories and images from the real world appearing on the news media were starting to look very much like footage from their video games. The playgrounds were empty, as were the cafes and squares. How were we going to continue playing or just interact?

2. Methodology, Conceptualization, Sources and Context

The research question we want to solve is whether the situation of confinement caused by the pandemic generated some kind of change in the video games market and how the people who play video games adapted to the situation caused by this global health crisis. The initial hypothesis is that the pandemic has reinforced the use of video games as spaces for play and social interaction, especially OWVGs.

This research aims to add to the debate concerning the relationships between virtual worlds and the real world. With this research, we aim to characterize the use that players have made of these virtual worlds during the pandemic, reconverted into spaces for relationships, learning and games, in which the establishment of rules of the game and their possible modifications create a new framework of social relations in a digital space.

During the period of confinement and afterward, our digital society has adapted to these new meeting places, complying with the restrictive measures imposed by the authorities to curb the spread of the pandemic.

In order to achieve this objective, we designed desk research to investigate the global evolution of video games since 2020, analyzing in detail different reports and statistics published by associations and large consultancies in the video game sector, studying the impact on the gamer community of the main OWVGs and discussing the future of fictional worlds in video games in the new normal world.

Fictional worlds are worlds derived from an actual world, endowed with autonomy, and composed of different subjects, objects, properties, and rules that are constructed from what is possible and necessary [23].

The necessity of rules has particular significance in the possible worlds of video games: rules need to exist but rather than suffocating play, they make the game possible [24], imposing fictional limits on the virtual world and the actions that avatars can perform within that space. Thus, video games do not create a real reproduction of the world, but rather a specific model associated with specific characteristics and restrictions that are generated by the industry [25]. As Bogost [26] (p. 121) pointed out:

“The rules do not merely create the experience of play—they also construct the meaning of the game. That is to say, the gestures, experiences, and interactions a game’s rules allow (and disallow) make up the game’s significance. Video games represent processes in the material world—war, urban planning, sports, and so forth—and create new possibility spaces for exploring those topics. That representation is composed of the rules themselves. We encounter the meaning of games by exploring their possibility spaces. Additionally, we explore their possibility spaces through play”.

Another feature of the video game environment or game space is that while it is designed in a specific way, it can be altered by player actions. As Phillip Penix-Tadsen stated [27], video games provide a responsive environment where obstacles and affordances are affected by player input. As a player moves through a game space, interacting with the surroundings, their actions change the space, and their decisions modify the contours of meaning. In this way, the video game space becomes a place where players actively create new meanings and learn to overcome new challenges. This is also the basis of the “projective stance” concept, developed by Gee, in which the world is seen simultaneously as a project imposed over the players and as a site onto which they can actively project their desires, values and goals [28]. This concept has implications both in the application of video games in education and in the present analysis of the adaptation of the gamer population to the social restrictions imposed in the pandemic.

These theoretical aspects related to fictional worlds can be verified in very popular OWVGs. For instance, in the video game *The Last of Us* [29], the action takes place in a post-apocalyptic United States of America, where humans have been almost wiped out by a killer fungus and their abandoned towns and cities have been invaded by vegetation. The game’s narrative develops as its characters journey down this world’s deserted roads, seeking refuge in its live forests and ruined manufacturing installations. The game’s atmosphere is created using a variety of techniques, such as using intermediate planes that generate uncertainty, games of light and shadows, environments characterized by the presence of water, and sounds that reproduce the bodily experiences of the gameplay.

Researchers Moore and Carter [30] introduce us to the term worldness in their article, “It’s not an island, it’s a world: Fortnite and worldness”, arguing that the huge success of the first-person shooter (FPS) game *Fortnite* [31] lies in how it promotes its worldness. This idea of immersion in another different world, or the absence of reality, allows one to place oneself in a space far from concerns such as those caused by the COVID-19 pandemic. They examine how games achieve these effects, highlighting certain key features, in particular, the way they evolve due to changes introduced with each new version, giving players a narrative to identify with and its social element that creates a community:

“...the changing game world and evolution of the game immerses players in myth; the social construction of Fortnite as a third-place in players’ lives immerses them in a space; and social capital, monetization and avatars entwine to immerse players in a sense of belonging to the world of Fortnite” [30] (p. 2850)

Another interesting and popular game is *EverQuest* [32]. First released in 1999, this massively multi-player online roleplaying game (MMORPG) has created a huge community of players around the world for two decades, “living” a few hours a day in its game space, Norrath, well characterized and documented by Aarseth [33]. The virtual world of Norrath is reminiscent of the fictional world of Tolkien’s *Lord of the Rings* or that of *Dungeons and Dragons*, and as the game progresses, online players form alliances to carry out increasingly complicated missions. *The Legend of Zelda: Breath of the Wild* [34] shows us another excellent example of a strange and novel possible world. This world, the land of Hyrule, has green meadows, forests, clearings, and high mountains with towering summits; it is a world at once recognizable and beautiful but also strange and other. *World of Warcraft* (WoW) [35], set in the world of Azeroth, and *League of Legends* (LoL) [36], with its virtual world called Runaterra, follow a similar premise to *EverQuest*. Both boast high numbers of monthly active players (124.7 million for WoW and 152 million for LoL), according to mmo-population.com, and LoL national leagues and world championships are held online and watched by audiences of millions (the 2019 final was viewed live by more than 44 million people).

Video games from other genres have also developed communities of players who converge in a parallel world. Even in battle royale-style video games like *Garena Free Fire* [37], an FPS similar to *Fortnite* or *PlayerUnknown’s Battlegrounds* (PUBG) [38], in which huge numbers of players shoot at one another in a bid to become the last survivor, a positive sense of community can be created when groups of people of different ages come together to play and have fun learning to adapt to a hostile environment. In terms of user numbers and downloads, with the data provided by newzoo.com, *Garena Free Fire* was the most downloaded mobile video game in 2019, and as twinfinite.net pointed out in Q1 2020, set a new record with 90 million daily players, while *PUBG* accumulated 734 million mobile downloads in December 2020, in addition to selling 70 million copies for PC. Furthermore, like the *EverQuest*-style adventure games, the community element of these war games sometimes extends to the formation of alliances; indeed, the other highly popular FPS, *Call of Duty* [39], allows three game modes, including a cooperative mode alongside the more familiar single or multi-player modes.

The open-world sandbox game *Minecraft* [40] occupies the first position on the Wikipedia video game best-seller list. This game is popular with players of all ages, although one study has asserted that, at least for boys, after the age of 11, interest dwindles [41]. Nevertheless, according to the statistics, it is the best-selling video game of all time, with more than 238 million copies sold and up to 126 million active players in any given month. *Minecraft* was originally created by Swedish company Mojang, and in 2014, it was purchased by Microsoft for USD 2.5 billion. Microsoft then went on to develop the *Minecraft* China extension, which it released onto the Asian market in 2017—for free—with the result that it soon had over 300 million user accounts.

Finally, this compendium of fictional worlds is not complete without mentioning *Animal Crossing: New Horizons* [42], a game developed by Nintendo for its Switch console. This video game generated great interest in 2020, as its release on 20 March coincided with the announcement of national lockdowns across the globe due to the COVID-19 pandemic. This simulation game revolves around a scenario where animals, with the appearance of stuffed toys, coexist with humans in a totally cute world. This particular release was the sixth version of *Animal Crossing*, and the narrative involves players assuming the role of a character who relocates to an island inhabited by anthropomorphic animals where they buy a property with a mortgage loan that needs to be repaid. The player’s avatar works off their debt by completing tasks such as fishing, collecting bugs, or growing food; in addition, players can partake in annual activities on the island and interact with other

players online [43]. The game provided an escape from the harsh reality of the pandemic and enabled real-time social interactions with friends, family, or, indeed, strangers.

3. Analysis of the Data and Situation of the Video Game Market in 2020

In 2020, mobility restrictions enforced due to the COVID-19 pandemic saw millions of people around the world confined inside their homes. During those endless months, video games, and digital multimedia platforms, as well as YouTube, Twitch, TikTok, and online shopping platforms, suddenly became the main entertainment in most homes with an internet connection. Our question is, did this result in any major changes in the global consumption of video games, particularly, was there any growth in open-world video games? If we look at the statistics, the answer is “yes”, although it is not as spectacular as might be assumed. Perhaps this was because gamers around the world were already accustomed to virtual pandemics since some of the most popular video games are based on post-pandemic worlds.

In the field of video games and pandemics, two titles are of particular note: *Pandemic* and *Plague Inc*. These two games experienced growth in 2020, and while the games each have very different rules of play, both involve situations in which the world faces some form of global health catastrophe. *Pandemic* [44] is a board and digital cooperative game where players work together, using science to beat four epidemic diseases that are blighting the world. *Plague Inc* [45], on the other hand, is a strategy game in which the player unleashes one of a choice of deadly pandemics with the objective of wiping out humanity. Players can further their aims using various tactics such as fake news and groups of vaccine deniers to frustrate anti-pandemic measures taken by states.

Many other open-world video games have their narrative origins in imagined pandemics, such as *Resident Evil* [46], *The Last of Us* [29], *Left 4 Dead* [47], *Tom Clancy's The Division* [48], *World War Z* [49], *Dead Space* [50], *Days Gone* [51], *The Walking Dead* [52], *H1Z1* [53], or *State of Decay* [54]. Thus, it is noteworthy how one particular gaming community responded to the real pandemic in 2020. Since 2013, the developers of *The Last of Us*, Naughty Dog, have held a commemoration day called Outbreak Day on 26 September. According to the game's mythology, this day marks the start of the Cordyceps fungal pandemic around which the gameplay is based, and to celebrate, Naughty Dog offers the game's followers promotions, gifts, and new content. Days before the 2020 celebration, Naughty Dog stated that they could no longer use the name Outbreak Day in the midst of a real pandemic that was causing the deaths of millions of people. However, as their video game community still continued to grow, with four million units sold in just three days after the release of Series II for PS4, they also felt some kind of celebration should continue. Thus, the 26 September has become, simply, The Last of Us Day.

On the other hand, unexpected virtual pandemics have occurred inside video game worlds, as happened in 2005, when the world event known as the corrupted blood incident occurred in the *World of Warcraft* player community. The pandemic lasted for a week after a spell infected several players, then spread through pets and amongst players' avatars throughout Azeroth such that up to two million players in the community were affected. Avatars could carry the disease asymptotically and infect others, creating a situation where many fled the most populous cities, and measures such as social distancing and self-isolation were imposed to curb community spread. This virtual pandemic caused tens of thousands of 'deaths' and was studied by real-world epidemiologists who published their findings in high-impact journals, such as *Science*, *Epidemiology*, and *The Lancet Infectious Diseases* [55–57].

According to Newzoo, an investment analysis firm related to video games, there was a 10% increase in the number of video gamers in the world between 2019 and 2020, with the number of players exceeding 2.7 billion in the year of the first confinement [58]. This represents a considerable annual growth, but it is in keeping with the general trend shown in recent years (see Figure 1).

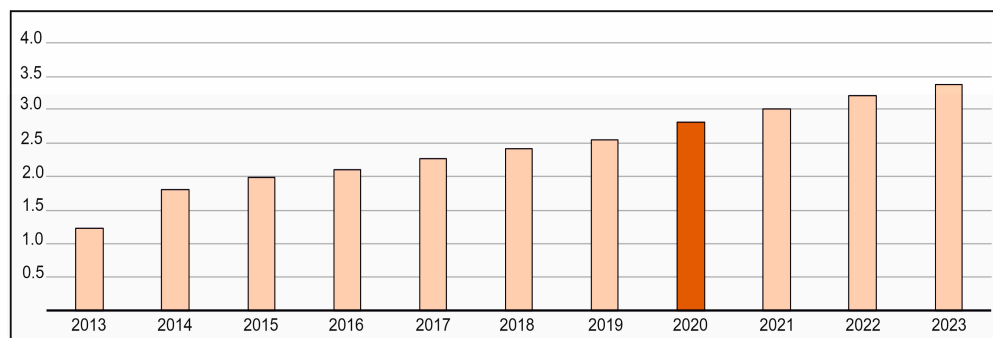


Figure 1. Growth in the number of video gamers in the world in billions. Source: newzoo.com (accessed on 1 December 2023).

The initial impact of the pandemic on the gaming community can be seen in the exponential increase in the video game market, and this was especially marked during the period when the first quarantines and states of emergency were being declared. According to the Interactive Software Federation of Europe (ISFE), in the 6 days between 16 March and 22 March 2020, video game sales increased by 63% worldwide. Individual countries saw much larger increases; for instance, France went into lockdown on 17 March, and in that week (16–22 March), digital downloading increased by more than 180%. In Spain, the lockdown started earlier, on 14 March, and sales had already risen by 148% in the week 9–15 March and rose by a further 23% in the following week (16–22 March). Meanwhile, in Italy, during the first week of its lockdown, digital download sales rose 174.9%.

New releases of games in March and April 2020 saw their number of players grow rapidly. One such, *Animal Crossing: New Horizons* [42], sold 5 million copies in the first month after its release and closed the year with more than 31 million copies sold. The free-to-play, multi-platform (Xbox, PlayStation 4 and Microsoft PC), battle royale game *Call of Duty: Warzone* [59] was released on 10 March, and in 10 days, recorded more than 30 million downloads, going on to surpass 85 million downloads by the end of the year. Another multi-platform game (Xbox and PlayStation), *Doom Eternal* [60], was released on 20 March and made a profit of USD 450 million in nine months. As a final example, a new version of the famous pandemic game *Resident Evil 3* [61] was released. This Japanese-made game first appeared in 1999 and features the T-virus that famously turns humanity into zombies in an epidemic that expands from Raccoon City. The new version appeared on 3 April (for XBOX and PC), and in the first week of sales, in the midst of a genuine viral outbreak, a remarkable 3 million copies were sold.

The overall number of players, however, has not increased dramatically due to the pandemic, although the time spent by each one on video games has increased greatly. In addition, the demographic profile has been modified, becoming more equal in terms of the numbers of male and female players, gaining a broader age spectrum, including many more far older and far younger players than before [62].

The leading media consulting group, NPD, conducted a survey of 5000 US game players in May 2020 to assess video game playing habits [63]. The results indicated that these gamers averaged 14 h per week playing video games, which was up from the 12 h per week reported in 2018. Nielsen, another consulting firm specializing in media and video games, also looked at the increase in time spent playing video games in March 2020. They questioned a total of 3000 gamers and compared four countries, finding increases in playing time of 45% in the US, 38% in France, 29% in the UK, and 20% in Germany. This survey also found that the time spent watching streamed gaming content had also increased in all four countries, with the US leading once again, with a nearly 50% increase, followed by France, with 40%.

In September 2020, the market research company Ipsos MORI compiled a report for ISFE entitled “Video Gaming in Lockdown” [64]. This report estimated that there had been

an increase in the time spent per week playing video games of 1.5 h compared to the same period in 2019 (see Table 1).

Table 1. Weekly time dedicated to video games in some European countries.

	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020
U.K.	10.8	11.2	11.7	11.7	11.6	12.5	13.6
France	7.7	8.2	8.8	9	8.6	9.5	9.2
Germany	8.8	8.5	8.8	7.8	8.3	9.6	9.5
Spain	7.3	6.7	7.1	7.6	6.7	7.9	9.2
Italy	6.7	7.1	6.5	7.6	7.4	8.2	8.5

Source: isfe.eu accessed on 1 December 2023.

Other statistics provide data showing a further increase in time spent on digital entertainment, especially among minors. Parents Together, a US-based association with more than two million members, conducted a survey of kids' online habits in April 2020, and 48% of the families who responded claimed that their children were spending more than six hours per day online. This represents a 500% increase compared to before the crisis. The parents surveyed also reported that the platforms and apps most used by their kids were largely non-educational: YouTube (78.21%), Netflix (49.64%), and TikTok (33.41%).

According to NPD, Twitch, the most popular video streaming platform, with 15 million daily active users and 3 million monthly creators, saw 3.1 billion hours watched in the first quarter of 2020—a 24% increase since the last quarter of 2019. In March 2020, Steam, a popular PC gaming platform, experienced an all-time high in concurrent user count of over 20 million people.

All this increased time spent playing video games and watching video game-related digital content has meant that, in 2020, the value of the video game market increased by 20%, to the point where revenues are now in the order of USD 180 billion [58]. The two biggest individual markets are China and the United States, which together accumulate nearly 50% of all global transactions. Nevertheless, other countries have seen rapid growth in this market sector; additionally, years ago, revenues were mainly based on the sale of consoles and video games, nowadays, the highest percentage of revenues are derived from mobile microtransactions and monetization in free-to-play games (F2P).

According to the data, the list of games with the highest number of followers in 2020 is practically the same as in previous years, with just two new appearances: *Among Us* [65] and *Fall Guys: Ultimate Knockout* [66]. These two games are classed as 'party' video games, and the popularity of this genre grew in 2020, primarily due to the possibility of social interaction that they offer.

As stated in the American Entertainment Software Association (ESA) in its 2020 yearbook: "the video games have become the leading form of entertainment because they bring us joy, connection and a sense of belonging when we need it most. Their value to society has never been more vital, ... in the new paradigm video game play matters like never before" [63] (p. 2). Newzoo put forward a similar idea: "while COVID-19 has impacted some aspects of development, the pandemic has not fundamentally changed the games market—nor has it transformed player behavior. Rather, it has accelerated trends we have previously reported. This acceleration results from the ongoing measures around the pandemic. Gaming has been a means for entertainment, escapism, and socializing and interacting with friends/family for many consumers, leading to unprecedented growth for the games market" [58] (p. 3).

One initiative that should be highlighted in this context is the campaign launched by the World Health Organization (WHO) in March 2020, #PlayApartTogether, from which all the major video game companies transmitted the health warning messages conveyed by the WHO through their channels, while the new perception of the socialization possibilities that video games offered spread. The WHO itself changed its opinion regarding video

games, since, only a year earlier, it warned of the harmful effects they could cause, and later stated that the COVID-19 pandemic revealed how digital games occupy a crucial role in social play [67]. In this sense, the heads of the companies welcomed this WHO campaign; as, for example, Yves Guillemont, co-founder and CEO of Ubisoft stated that “This unprecedented period has shown what a positive impact video games can have on players’ lives, offering people around the world not just a source of entertainment and escape, but also a means to stay connected with friends and family”; Bobby Kotick, delegate of Blizzard Activision stated that “Though we are not physically together, we’re still united. We love our communities and want you all to be as safe as possible—follow the recommendations of the @WHO, practice physical distancing, take care of yourselves and each other, and #PlayApartTogether”; or Nicolo Laurent CEO of Riot Games “. . . playing games is more than just a game; it’s a meaningful life pursuit. . . Games are a unique way to stay connected with friends and family, even if we cannot be together physically”. This is the idea that this paper wanted to underline: video games, especially OWVGs, played with friends and family have since confinement become new playgrounds and training spaces. This was already partially the case before the pandemic but the imposed measures of social distancing have spread and multiplied all over the world [68].

4. Discussion and Conclusions

Users have entered the video game market, and experienced gamers have increased their engagement with both groups, spending much of their time in open-world video games.

The amount of time spent viewing broadcast content about video games has also increased. A particular area of growth is in watching events where players live-stream their gameplay. Many of these live-streaming players have huge followings, which, in turn, increases the hype surrounding particular games. Constantly searching for innovation, the principal companies behind the social media platforms, live-streaming platforms, and video games (Facebook or Epic Games, for instance) are currently developing something known as the Metaverse, a concept that could become the ultimate new virtual world. The Metaverse is conceived as a space in which thousands of games coexist and where each gamer has their own game-independent identity. Obtaining their own skin in *Fortnite* [31] is a key milestone for some players, and this is a feature of many other video games, but gamers often alter these skins throughout the games as they take on different personalities.

Examples of how people are increasingly living online can be seen across the globe, demonstrating how the world of video games has taken a qualitative leap during the pandemic. The rapper Travis Scott, for instance, donned a *Fortnite* skin to perform a series of concerts watched by more than 48 million people inside the game’s environment. Korean *Roblox* players have chosen to get married within the game, with an audience of thousands of people from different nationalities, and *Animal crossing: New Horizons* [34] has been the scene of numerous real children’s birthday celebrations. Even the business world has got involved with offices being ‘built’ in *Minecraft* [40] to hold business meetings between managers from different countries. Many large companies now use video games, in addition to social media, as another means of marketing to consumers, and the investment in online marketing now surpasses that put into traditional advertising. In terms of sports, e-sports audiences now lead those of the real-world Super Bowl or NBA, and, during 2020, FIFA’s highest revenues were generated by video game royalties rather than real football content. Added to this, a generation of gamers, YouTubers, and streamers have turned virtual fun into fortunes, becoming new idols for millions of young people.

Our research question was whether the situation of confinement caused by the pandemic generated some kind of change in the video games market and how the people who play video games adapted to the global health crisis. Based on the research carried out, we can present the following main conclusions:

- According to this research, the video games industry has grown during this time, continuing the progress recorded in previous years and in contrast to what has happened in many other leisure industries. Video games were in production for years before

they were released, and the COVID-19 pandemic may have accelerated or delayed companies' schedules. Future projects, such as the Metaverse, will have to wait for new technological advances to become "reality".

- There have been no major changes in the lists of best-selling or downloaded video games, except for the rise of two party games, *Among Us* [65] and *Fall Guys Ultimate Knockout* [66], due to the sociability and fast pace of both games. During the pandemic, friends gathered in front of the screen to continue playing in a friendly way and to chat at the same time, knowing that they were secure in a safe place: their homes.
- The global and future importance of this entertainment industry has become more visible to society as a whole. Beyond the previous debates about the violence of some video games or the possible addiction they could cause in teenagers, video games have permeated society during these months, through the news, their adaptation in series or films, their presence in social networks, their use in classrooms, conversations at work, the social rise of gamers and streamers, or the games that children now play in the park. Video games, OWVGs in particular, are now much more socially accepted because of the use they have been given since the pandemic as playgrounds and training spaces.
- The people who play video games have adapted to the health crisis by transferring their social relations to virtual worlds. The social distancing ordered by the authorities has been bridged by game players by reinforcing the bonds of their virtual communities or by transferring friends and relatives to different video games to meet up in these Worlds of Affect with them and spend good times together.
- Virtual worlds were places of escape and meeting as the health crisis progressed. The people who play video games used their "projective stance" to supply different social interactions that moved to virtual worlds, such as birthday parties, playing with friends, dating, "going out", attending concerts or participating in work meetings.
- Resilience, understood as the ability to adapt to changing situations, has increased through video games during the pandemic, by converting online games into moments of social relationships between peers. Instead of spending hours of passive entertainment watching TikTok or YouTube shorts, it is preferable to meet friends on RunaTerra, Fornite Island or on a spaceship to play and learn "among us".

At the beginning of the paper, we outlined that this research intended to pose questions for debate concerning the relationships between the different possible worlds and the real world, using open-world video games and the COVID-19 pandemic as a context. Our intention was to uncover elements and processes that might strengthen the resilience of contemporary society. In this sense, the thing that stands out most from our research is the magnitude of the changes happening in the global entertainment industry in recent years and how there can be no doubt that video games will be a very important part of our future digital society. Indeed, this future is already a reality for millions of teenagers and young adults who spend their leisure time in a fictional world through a screen or, as Generation Z prefers, multiple screens. Understanding this reality is vital to reducing the generational gap that is opening up between the international digital community and the generations that still remember the days of analog technology. Video games are here to stay and have already created dozens of new worlds inhabited by millions of beings.

As a caveat, we must add that the resilience promoted by video games must be fostered by parents and educators, and to help us, there are, fortunately, numerous reliable and independent video game rating forums. It is not a question of allowing 8-year-olds to play any type of game, abandoning our obligations as parents or educators, but of ensuring that immersion in these new virtual realities is accompanied by education and, at the same time, encouragement to enjoy real-world landscapes.

Children and teens are so-called digital natives, almost more accustomed and confident in socializing via their devices than in person, as Wiederhold [69] pointed out: "The digital world is the real in which young people feel most at ease and linked to their peers" (p. 2). Therefore, the video game market will continue to grow in the coming years, simply

becoming another form of global entertainment, just like international football and TV are now, and cinema and radio were before. It is yet another feature of the evolution of human society that has been accelerated by the global health crisis.

One of the most important limitations of this research has been the lack of specific surveys to resolve the hypotheses raised, which have had to be supplemented with statistics on the video game market and reports from associations and consulting firms. Research on this specific area of video games will continue with detailed empirical studies to overcome these constraints.

The research should continue in the coming years to analyze the impact of COVID-19 on the production of future video games and the process of population adaptation to new virtual worlds. Social relationships change when certain events occur that modify our routines as a species. The pandemic has been a differential event in our society, and the effects that this health emergency has caused in all areas of our lives must continue to be studied. Video games, especially OWVGs, are the new playgrounds, the new park benches where members of the digital society hang out and, at the same time, learn to live in this flexible and constantly changing world. The consequences of these changes should not be foreign to the academic world; the new models of social relationships and the spatial characteristics of these virtual places must be analyzed. Virtual worlds are software and informatics engineering but they are also social spaces.

Author Contributions: X.S.M. and M.S.M. are both responsible for the conceptualization, investigation and data curation of this paper. X.S.M. is the author of Sections 1, 3 and 4. M.S.M. is the author of Section 2. Both authors revised and corrected the entire text. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data that support the findings of this study are available in different public domains. These data were derived from the following resources available in the public domain: newzoo.com, accessed on 1 December 2023, mmo-population.com, accessed on 1 December 2023, twinfinite.net, accessed on 1 December 2023 and isfe.eu, accessed on 1 December 2023.

Conflicts of Interest: The authors declare no conflict of interest.

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