MDPI

Article

Metaverse Unveiled: From the Lens of Science to Common People Perspective

Mónica Cruz *, Abílio Oliveira * and Alessandro Pinheiro

ISTAR-IUL, Instituto Universitário de Lisboa (ISCTE-IUL), 1649-026 Lisboa, Portugal; alessandro.pinheiro@iscte-iul.pt
* Correspondence: monica_susana_cruz@iscte-iul.pt (M.C.); abilio.oliveira@iscte-iul.pt (A.O.)

Abstract: Everyone forms a perception about everything, including the Metaverse. Still, we may expect a gap or disconnection between what has been expressed by various researchers and the widespread perceptions of technology and related concepts. However, the degree to which these two frames of representation differ awaits further investigation. This study seeks to compare the Metaverse perceptions between the scientific findings and the common people's perceptions using the data from two previous qualitative studies about the representations of the Metaverse from a scientific perspective versus a common perspective (by adults). Is there a common ground between these two perspectives? Or are they in opposition? As goals for this research, we aim to contrast the depiction of the Metaverse in pertinent studies (published in indexed journals) with the portrayal of the Metaverse among adults (non-researchers); ascertain the most prevalent depiction of virtual reality; and determine the significance of gaming within the representations of the Metaverse and virtual reality. This investigation encapsulates crucial findings on the Metaverse concept, contrasting the discoveries made by researchers in prior studies with the common public's interpretation of this concept. It helps with understanding the differences between the Metaverse representations, the immersion and perception concepts, and a disagreement from the past vs. future perspective.

Keywords: metaverse; virtual reality; gaming; immersion; adults

1. Introduction

All the most straightforward technology started from an idea or a dream, from our inner curiosity and creativity. After this beginning, these ideas brought experiences and then the realization of a possible fundamental concept coming to life. Walt Disney used to say, "All our dreams can come true if we dare to pursue them" [1] "because it's kind of fun to do the impossible [and] if we can dream it, we can do it" [1].

Our natural curiosity leads to ideas, which become real concepts. We now face another great concept emerging: the Metaverse. As with any other concept in its conceptualizations, the Metaverse still lacks a more final and generally accepted definition to be developed, while several vulnerabilities need to be resolved [2]. As usual in technology fields, the users are at the core point of all the evolution [3] because, without them, concepts such as Metaverse, virtual reality, and technology could not evolve through continuous transformations [4].

Suppose the user is the fulcrum point for the concept evolution. In that case, the authors or researchers are the driving force to define any concept in the most precise way—while in parallel, the common idea that arrives at the standard user grows. If we may consider the 'scientific domain' and the 'common domain', how far or how close are the concepts adapted in these two 'worlds'? Can common thoughts and scientific knowledge be aligned? Or are there two distinct perspectives progressing in parallel?

The Metaverse concept is increasingly discussed and has led to increasing use, often associated with virtual reality, particularly in games, different applications, platforms, and

information systems, which strongly motivates us to want to analyze and study it. Also, in a PhD project, the present study is a component of comprehensive research on the Metaverse, virtual reality, and gaming concepts—in sum, we ask the following: to what extent may the Metaverse scientific representations vary from the Metaverse common perceptions?

In this context, we aim to (1) compare the Metaverse representations found in relevant studies (published in indexed publications) with the Metaverse representations among adults (not researchers); (2) verify what is the most common representation of virtual reality; and (3) verify the importance of gaming within the Metaverse and virtual reality representations.

This study can help us understand the main concepts that arise from comparing the scientific and the common view that can complement and give new insights into the Metaverse concept. It compares the representations of the Metaverse from a scientific perspective versus a common perspective (among adults), considering the results of two previous qualitative studies [2,3]. The significance of this study lies in its thorough exploration of the Metaverse from both common and scientific viewpoints. It traces the Metaverse's journey from a concept in Neal Stephenson's book to a sophisticated digital reality, showcasing the impact of human curiosity and creativity. The study will provide a detailed understanding of these perspectives by examining how scientific representations of the Metaverse differ from common perceptions; offering valuable insights by comparing common representations of adult gamers with scientific depictions; and aiding in conceptualizing the Metaverse from both research and everyday perspectives. Understanding concepts like social, immersion, virtual, and virtual reality highlights the Metaverse's role in social interaction and its immersive nature. The study will emphasize the differences between common and scientific views, particularly in how reality is perceived.

Our paper includes an overview introduction, followed by a concise literature review and a brief summary of earlier studies. Afterward, we present the methodology applied to compare the results from both previous studies, preceding the findings of this study, followed by a discussion considering the present results, and, finally, a conclusion, including suggestions for future work.

2. Background

2.1. Metaverse

Before we look into the Metaverse definition, we have to look at its genesis. The Metaverse word comprises the words "Meta", which means beyond, and "verse", which comes to form the word universe. As mentioned in the book Snow Crash in 1992, Neal Stephenson was the first to propose this concept, considering that the world was so terrible that no one wanted to live in it. Hence, the Metaverse became a parallel universe where everyone lived through their avatars [5]. The Metaverse would be a virtual construction that could be perceived as real on the internet [5]. This concept aims to become an immersive, three-dimensional, multisensory experience, an alternative reality based on extended reality. This medium includes technology such as virtual and augmented reality [5]. The first attempts to achieve these goals were found in the Second Life game (2003) [6], with virtual reality, and Pokemon Go, with augmented reality [5].

Until today, there is no consensus about one general Metaverse definition, but there is some agreement with some definitions [2].

The Metaverse can be described as a 3D universe that is online and combines multiple spaces where you can work, meet, go to concerts, and meet other people, all through an avatar [7]. It has a parallel universe that exists alongside the physical world in an immersive, interactive, and persistent way [8], where you can interact and modify the present information without physical limitations [9]. The Metaverse is a virtual reality world where you can enter and exit any time [8]. It is considered the future of cyberspace [8], but the future is already here. It is just not evenly distributed [10]. The inner world of the Metaverse continues to exist even if we are not connected [6], becoming a layer between us

and reality [11], where a 3D virtual world is shared and experienced through virtual and augmented reality [12].

The Metaverse combines online games, social networking, and augmented and virtual reality to facilitate digital engagement [13]. Like any physical or virtual world, the Metaverse needs a functional economy [14], enabling users to engage themselves economically, as well as socially and culturally, with their avatars [15], and uniting socially immersive virtual reality platforms compatible with video games [16]. At this point, the Metaverse is regarded as a digital universe that integrates gaming, social networks, and virtual reality [13].

The social application of the Metaverse will transform the social network [17]. The gaming application of this concept is responsible for tying us to a screen and enveloping us with alternative worlds. The gaming world is the origin of the Metaverse [2], so the limits and boundaries between these concepts have disappeared [18]. The Metaverse concept may also function as a digital universe that blends online gaming elements with social networks [13], which can be accessed via the internet using augmented reality devices, game consoles, computers, tablets, or mobile phones [19], existing in our lives consciously or unconsciously in our lives [2].

2.2. Virtual Reality

Virtual reality as a concept is a technology in constant and fast development. It involves entering the fullness of another world using any device (for example, a headset), which promotes improving the virtual experience by excluding the real world and blurring the boundaries between virtual and real reality [6]. Virtual reality thus becomes an immersive technology popularized by the gaming area. However, the benefits of this technology are visible in fields like education [20].

To better understand this concept, we must comprehend its birth. The word "virtual" derives from the word "virtus" in Latin, which means strength or power [21]. It is also the origin of virtue, defined as a person's power or strength. According to the Dictionary of Philosophy in 1920, "The virtual X (where X is a common noun) is something, not an X, that has the efficiency ("virtus") of an X" [21]. Virtual means "as something", thus virtual reality is severe and profound as a reality, something that affects reality but is not real [21].

Virtual reality as a concept is a technology that is constantly developing. It involves entering the fullness of another world using any device [5], thus becoming an immersive technology popularized by the gaming area. However, the benefits of this technology are visible in other areas, such as education [20], the cultural heritage domain [22], and other fields.

It is a technology that enables users to sensitively experience real things similarly to the standard interface with the physical world [23]. Virtual reality uses a computer's graphics systems with various interfaces and presentation devices that create the effect of immersion in a computer-generated 3D environment [24]. Through technological evolution, virtual reality has become a new means of finding new practical and effective communication applications [25]. Virtual reality is an electronic simulation [26] that replaces the user's primary senses to interact with computer data [17], which means substituting the human senses with computers and peripherical devices [23]. It enables the creation of an artificial reality based on our actual world [23]. Virtual reality utilizes computer graphic systems along with various displays and interfaces to enable immersion in a 3D computer-generated environment [24].

For this reason, it is considered a new way of communication [25], allowing humans to advance the development of this technology because of its impact on their daily lives [27]. It is achievable with different devices [19], enables the creation of new environments [28], and has transformed into an immersive experience [29]. These immersive experiences have been explored in various fields, including virtual reality, gaming, and design [30].

Virtual reality may also be an illusion that computers create [23], allowing ongoing experiences for a wide audience and a realm of social interactions [31]. The user is admitted

to another place [17], leaving their local space and entering a remote space [32] and enabling experiences of tangible things akin to those in the physical world [23] with realistic environments [33], allowing us to have high expectations on how to revolutionize, interact, and deal with the digital world [34]. It is crucial to recognize that each user's experience with virtual reality is unique and shaped by their individual backgrounds, cultures, and personal histories. [25].

2.3. Gaming

We now have to dive into what connects the Metaverse and virtual reality concepts, which is the gaming world, because the evolution of the technology of those two concepts potentializes the gaming industry [35], making the limits between these concepts (Metaverse < > gaming) disappear [6]. Nevertheless, the gaming world has already made its mark as the founder of the Metaverse [2], but what is gaming? How can we define it?

The origin of gaming comes from our need, as humans, to recreate and play games. Play is a free activity that brings fun and joy and allows the imagination to thrive [18]. It is essential [18] because play involves immersing ourselves in the world to understand our surroundings and find ways to connect with others [36]. It can be seen as a voluntary attempt to overcome obstacles [37], to make a series of significative choices [38], and to solve problems [39], using structured rules and objectives that are fun [18]. A game can be defined as a system where players get involved in an artificial conflict with rules, resulting in a quantifiable result [40]. Games allowed the rise of human culture and creativity [41], a decisive factor in our species' development [42].

With the evolution of technology, play has evolved through video games or digital games. Thus, the games are not something new but something that has been with us for a long time [43]. They respond to all our wishes and offer experiences that we did not know we wanted [6], providing even more shared experiences and becoming even more social [44].

A video game or digital game can be of any type. It is designed and programmed to utilize software and hardware systems that deliver sound and images [40,45–47], which becomes only possible because of the development of technology and virtual reality that allows the creation of immersive experiences and transformations of new worlds [4].

Digital games have brought people together worldwide [48,49], positively impacting players and perceiving their well-being through cognitive stimulation and social influences [50]. Perceived stress is interpreted as a positive emotion [51] that allows users to focus on their well-being (emotions and stress), helping them to know themselves better and regulate their emotions [52]. This highlights the significance of the social aspect of gaming, as most players engage with others [53] and prefer to play with others [54]. After all, communication, involvement, and bonding are more fun [55].

It is also important to note that gaming areas and virtual reality can actually have significant potential in supporting individuals with special educational needs and disabilities as well as in education, training, or health promotion [56–58]. They enhance motivation, develop metacognitive skills, and foster emotional intelligence. The study identified a positive correlation between adaptive functioning and success in VR training [57]. With technological advancements, serious games and gamification techniques are increasingly utilizing mobile and digital platforms, virtual reality, and machine learning for personalized interventions [56].

3. Previous Studies: Brief Description

This section will briefly describe the two previous studies used for the study presented in this article. Both studies are already published and indexed and are available through these links:

(1) Documental Study: https://www.mdpi.com/2227-9709/10/2/47 (accessed on 31 July 2023)

(2) Focus Group: https://www.mdpi.com/2076-3417/13/15/8573 (accessed on 31 July 2023)

3.1. Documental Study (1)

3.1.1. General Description

This study aimed to investigate more leads regarding the Metaverse concept, having as a research question: How is the Metaverse perceived?

The study involved a documental analysis, or meta-analysis, of 50 highly relevant scientific papers selected based on specific inclusion and exclusion criteria. The scientific documents were indexed articles from leading database platforms (B-On, Scopus, and Google Scholar) using three main keywords: Metaverse, virtual reality, and gaming.

Inclusion criteria were publication within the last three years (2021 to 2023), inclusion of at least one of the main keywords, and alignment of the article's concept with the study's goal.

Among the 50 selected articles, the majority were from 2022 (6%), and 74% were journal papers. The most frequent publishers were IEEE (12%), Research Gate (10%), DergiPark (10%), CNKI (6%), and ScienceDirect (6%).

After the article selection, we analyzed the data from the titles, abstracts, keywords, introduction, and conclusions using the Leximancer software (4.5 version, Leximancer Pty Ltd., Queensland, Australia). Titles are important from a marketing point of view [59], abstracts are crucial in focusing on the essential issues shown in the papers [60], and keywords are a vital factor for classifying and searching any article [61]. They provide crucial insights into concepts and conclusions by synthesizing the results from each presented study [62].

After this selection, we used the Leximancer software to analyze the sections of the articles referred to. This study followed the PRISMA 2020 guidelines, please see Figure 1, which shows the flow diagram for systematic reviews.
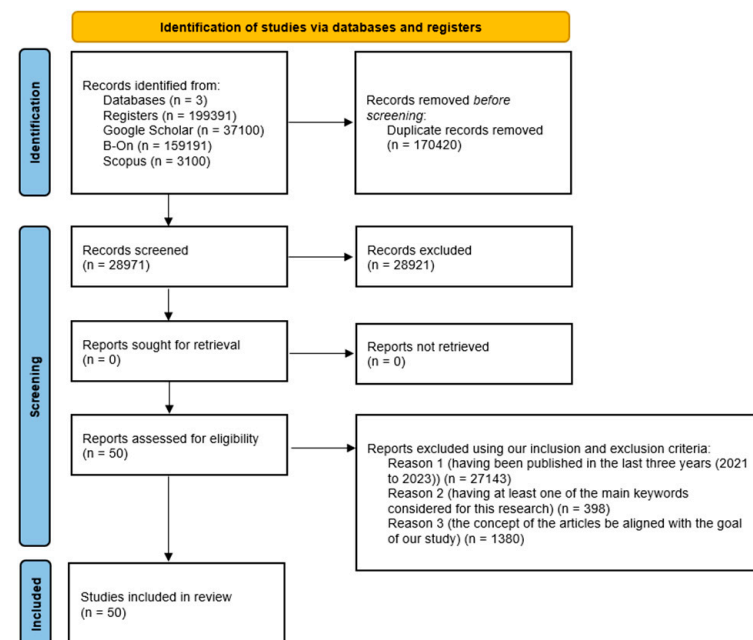

Figure 1. PRISMA 2020: the flow diagram for systematic reviews.

3.1.2. Leximancer Software

Qualitative research allows for the investigation of the relations of the categories that may change during the research process [63], enabling one to observe without the concern of measuring things [64]. Due to the emerging technology, qualitative research has also been evolving [3].

With this evolution, Qualitative Data Analysis (QDA) and Computer-aided Qualitative Data Analysis Software (CAQDAS) have become crucial not only for analysis but also for enhancing the qualitative analysis process [65]. The QDA software, as a word processor, supports qualitative research [66] by increasing the validity of the analysis [67,68], allowing consolidation of the research [65,69], and facilitating the sampling decisions [70].

We used the CAQDA software Leximancer for the documental study, which facilitates textual analysis of documents, identifies high-level concepts, and provides key ideas and insights [3]. It has been applied across various academic research domains, including business, the public sector, social and cultural studies, education, leisure, and tourism [71], proving to be reliable in its analysis [60], stable, and equivalent to intercoder reliability [72]; it also provides substantive content and sureness [73,74], which are very important to an investigation and the researcher.

3.1.3. Main Results Description

After collecting all the data, the corresponding text files gathered from titles, abstracts, keywords, introductions, and conclusions were uploaded and analyzed individually through Leximancer, which creates concept maps to specify the concepts in detail (see Tables 1–3 for descriptive results).

Table 1. Abstract concepts analysis.

Concepts	Frequency	% Relevance
Research	38	17
Social	37	16
Immersive	36	16
Future	30	13
Users	25	11
Paper	25	11
Online	24	10
Platforms	22	10
Worlds	21	9
People	21	9
Physical	19	8
Data	19	8
Experiences	17	7
Healthcare	17	7
Current	17	7
Real	16	7
Analysis	16	7
Environments	15	7
Life	15	7
Use	14	6
Impact	13	6
Using	12	5
Provide	12	5
Applications	12	5
Review	12	5
Software	11	5
Information	11	5
Framework	10	4
Important	10	4
Process	9	4

Table 2. Introduction concepts analysis.

Concepts	Count	% Relevance
Metaverse	698	100
Virtual	311	45
Virtual Reality (V.R.)	150	21
Users	113	16
Digital	108	15
Reality	107	15
Social	93	13
Physical	88	13
Research	85	12
Immersive	65	9
People	61	9
Future	59	8
Development	53	8
3D	49	7
Augmented Reality (AR)	46	7
Data	47	7
study	47	7
Avatars	46	7
Real	46	7
Online	46	7
Platforms	45	6
Information	43	6
Work	42	6
Concept	42	6
Applications	39	6
Content	38	5
Literature	37	5
Paper	37	5
Media	36	5
Platform	34	5
Human	32	5
Potential	32	5
Companies	32	5
Meta	27	4
Interaction	31	4
Current	30	4
Market	29	4
Example	25	4
Including	24	3
Services	23	3
Intelligence	22	3

Table 3. Conclusion concepts analysis.

Concepts	Frequency	% Relevance
Metaverse	553	100
Virtual	130	24
Social	112	20
Virtual Reality	88	16
Reality	81	15
Users	81	15
Future	74	13
Support	67	12
People	62	11
Research	58	10

Table 3. *Cont.*

Concepts	Frequency	% Relevance
Use	53	10
Digital	50	9
Human	49	9
Physical	46	8
Platforms	42	8
Different	42	8
Online	41	7
Real	41	7
Development	41	7
Activities	39	7
Life	39	7
Data	38	7
Time	37	7
Companies	37	7
Business	36	7
Analysis	33	6
Applications	32	6
Example	32	6
Impact	31	6
Facebook	25	5
Results	28	5
Important	28	5
Further	25	5
Field	25	5
Information	24	4
Interaction	23	4
value	23	4
Current	22	4
Concept	22	4
Work	21	4

It is important to highlight that the following tables are the only ones we will use in this comparative study. In the next tables, it is possible to observe the frequency of the words and the percentage of relevance. In Leximancer software, the "percentage of relevance" for a concept measures the frequency of text segments coded with that concept relative to the most frequent concept in the list [75]. The relevance percentage helps to understand the prominence of a particular concept in the analyzed text [75].

3.1.4. Main Study Findings

This study allowed us to identify seven main concepts (Reality, Virtual Reality, Users and People, Affordance, Business, Development, and Entertainment) and observe their connections.

The Metaverse is seen as an integral part of our lives, fostering new forms of communication and interaction through immersive experiences, thereby enhancing the development of new services and entertainment options [3]. The Metaverse is also seen as being driven by technology, including virtual and augmented reality, enabling the creation of new virtual worlds and fostering significant opportunities in our lives, whether in entertainment, social interactions, services, or work [3]. The Metaverse perspective emphasizes gaming entertainment and acknowledges the growing social needs of players [3].

3.2. Focus Group Study (2)

3.2.1. General Description

This focus group explorative study aimed to understand the following: How is the Metaverse being perceived by gamers?

This study involved three synchronous online focus groups with 13 participants from Portugal, consisting of seven males and six females, with an average age of twenty-nine. Participants were selected based on the following inclusion criteria: being a gamer (regularly playing digital or video games), being a young adult or adult, and having some knowledge of videoconference tools. Exclusion criteria included not meeting all the inclusion criteria and lacking access to a computer with internet for the online focus group. Google Meet was used for the videoconferences.

The focus groups consisted of twenty-eight questions, organized into three main themes: gaming, animation, and the Metaverse. Regarding the sample, the number of participants is crucial. In qualitative research, we do not aim to generalize a population but rather to identify social processes [76]. However, we considered the saturation point of the concepts to be the point where new data gathered will not provide any new theoretical insights [77,78]. One focus group generated 64% of the themes/concepts, while three focus groups generated 84%, indicating that three focus groups are sufficient to identify the most prevalent concepts [79]. A small number of groups is sufficient to capture the breadth of the main issues [80]; therefore, we opted for three focus groups, resulting in a total of 13 participants.

3.2.2. Focus Group: A Qualitative Method

The focus group is a qualitative method for collecting data that allows a few people to engage in an informal discussion [81]. It can also be considered a non-standard technique for gathering information [82] through a discussion where a moderator leads the focus of the debate on the research issues [82]. The research is responsible for prior planning and determining which questions to approach [2], so facilitating participation by the discussion group can occur [81].

This qualitative method facilitates discussions among participants that might not happen in real life, quickly generating a substantial amount of data [83] and making them more valuable than a representative sample [84].

The focus group is a highly effective way of providing information regarding what people think and feel and how they do it [85], reflecting human capabilities [2]. It is also flexible enough to be used as a single investigation method or in combination with other methods [2].

3.2.3. Main Results Description

In this study, we gathered all the participants' answers and categorized them in frequency results. The following tables (Tables 4 and 5) relate to the results from the questions chosen for the present comparative study.

Table 4. Metaverse—What is the Metaverse for you? Refer to at least three words about what it means.

Categories	Total	%
Past	13	100
Socialization	9	69.2
Evolution	9	69.2
Virtual	7	53.8
Creation	6	46.2
Immersion	3	23.1
Build	3	23.1
Monitorization	2	15.4
Threat	1	7.7
Risk	1	7.7
Innovation	1	7.7

Table 5. Metaverse—What do you think about the Metaverse? What do you think the Metaverse is for?

Categories	Total	%
Old concept	13	100
Promotes Socialization	9	69.2
Technological evolution	9	69.2
Virtual reality	7	53.8
Creates characters	4	30.8
Allows immersion	3	23.1
Allows people to make things virtually	3	23.1
Monitorization of the virtual world	2	15.4
Creates a new reality	2	15.4
Creates new worlds	1	7.7

Question 1. What is the Metaverse for you? Refer to at least three words about what it means (see Table 4).

Question 2. What do you think about the Metaverse? What do you think the Metaverse is for? (see Table 5).

3.2.4. Main Study Findings

The study found that gamers view the Metaverse as a blend of technological and social elements within games, often experienced through virtual reality [2]. This is not a new concept, as games are seen to enable immersive experiences through virtual reality technology. Socialization and communication, whether at an individual or community level, are crucial. Additionally, it is recognized as a promoter of well-being [2].

4. Methods

4.1. Data Gathering

We used the results gathered both from the documental study (1) [3] (Tables 1–3) and a focus group study (2) [2] (Tables 4 and 5) to develop this comparative study.

We decided only to use the data analysis described in Tables 1–3 on the documental study because they were the only significant and comparative data meaningful for this study. Also, for the focus group, we decided to use only two of the twenty-eight questions available because these are the ones that focused on the Metaverse perceptions and, therefore, were comparatively meaningful for this study (see Tables 4 and 5). This follows the PRISMA 2020 guidelines for systematic reviews [86,87].

4.2. Data Analysis and Results

For this comparative analysis, because of the significant meaning present in the results, we decided to only consider the categories/concepts with at least a 10% significative value to focus on the most relevant categories/concepts. This 10% minimal relevance was decided by the analysis of all data, showing us that it was impossible to compare or to have a significative value to compare to below that value. The use of percentages for the comparison of this study was determined by the need for standardization, relative understanding value, and to deal with the proportions, as well as simplicity and universality. Standardization is important because the percentages allow for standardization, enabling comparison across different groups or categories within the study [88]. Relative understanding is important because it provides a relative understanding of the data, which can be more meaningful than raw numbers [88]. Relative understanding is ideal for dealing with proportions, which are common in many scientific studies [88]. Simplicity and universality are important because percentages are simple to understand and universally recognized, making the findings of a study more accessible to a broad audience [88]. Considering the nature of the data gathered from both studies and the research question being addressed, the use of percentages was considered appropriate. We addressed the appropriateness and carefully

considered the use of this statistical measure in this study, as with any other quantification technique [89].

The subsequent tables (Tables 6–10) show the values considered for this comparison analysis, considering the significance and meaningfulness of the results.

Table 6. Abstract—significative concepts.

Concepts	Frequency	% Relevance
Research	38	17
Social	37	16
Immersive	36	16
Future	30	13
Users	25	11
Paper	25	11
Online	24	10
Platforms	22	10

Table 7. Introductions—significative concepts.

Concepts	Frequency	% Relevance
Metaverse	698	100
Virtual	311	45
Virtual Reality (V.R.)	150	21
Users	113	16
Digital	108	15
Reality	107	15
Social	93	13
Physical	88	13
Research	85	12

Table 8. Conclusions—significative concepts.

Concepts	Frequency	% Relevance
Metaverse	553	100
Virtual	130	24
Social	112	20
Virtual Reality	88	16
Reality	81	15
Users	81	15
Future	74	13
Support	67	12
People	62	11
Research	58	10
Use	53	10

Table 9. Question 1—significative categories.

Categories	Total	%
Past	13	100
Socialization	9	69.2
Evolution	9	69.2
Virtual	7	53.8
Creation	6	46.2
Immersion	3	23.1
Build	3	23.1
Monitorization	2	15.4

Table 10. Question 2—significative categories.

Categories	Total	%
Old concept	13	100
Promotes Socialization	9	69.2
Technological evolution	9	69.2
Virtual reality	7	53.8
Creates characters	4	30.8
Allows immersion	3	23.1

We started to make a comparison by taking into account the three most relevant results from the documental study (abstracts, introduction, and conclusion, corresponding to the first nine columns starting from the left side, in this respective order) and from the focus group study (question 1 and question 2, the remaining six columns in corresponding order) (Figure 2).
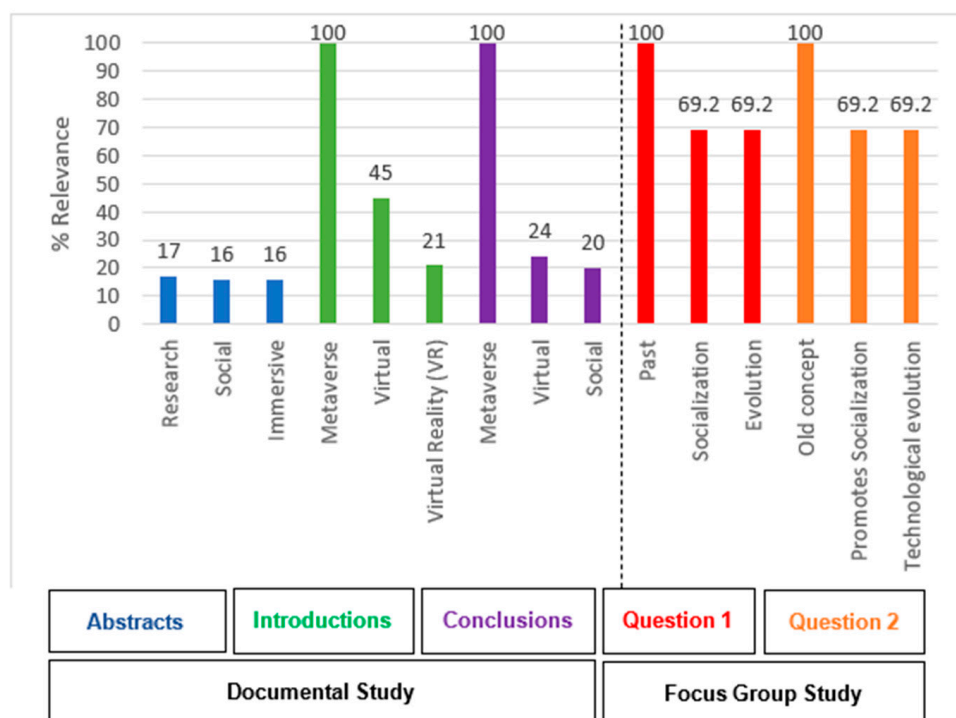
Figure 2. Comparison Graphic—3 most mentioned concepts/categories.

Observing the results, we can see that the common concept/category is the Social concept, which is mentioned in abstracts, conclusions, and both questions from the focus group. This indicates that the Metaverse is perceived by researchers and common adult gamers as a social concept, promoting socialization among its users.

For the following comparison, we focused on the common concepts/categories mentioned in both studies (see Figures 3–7 and Tables 11–15). The % relevance shown represents the % of concepts presented in the texts (documental study) and the % of categories mentioned by the participants (focus group study).

The first common concept/category mentioned was social (Table 11, Figure 3). It is possible to observe the high relevance of both studies and how this concept appears in every part of each study (abstracts, introductions, conclusions, question 1 and question 2). So, there's a high representation of the Metaverse as a social concept, promoting the socialization between its users.
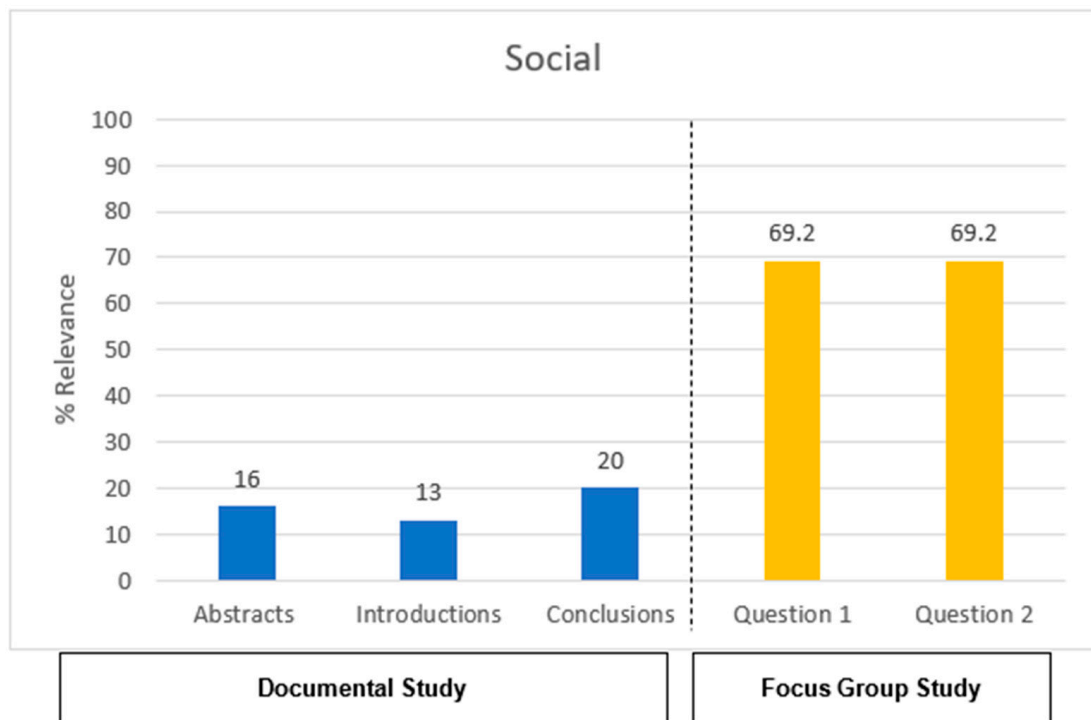
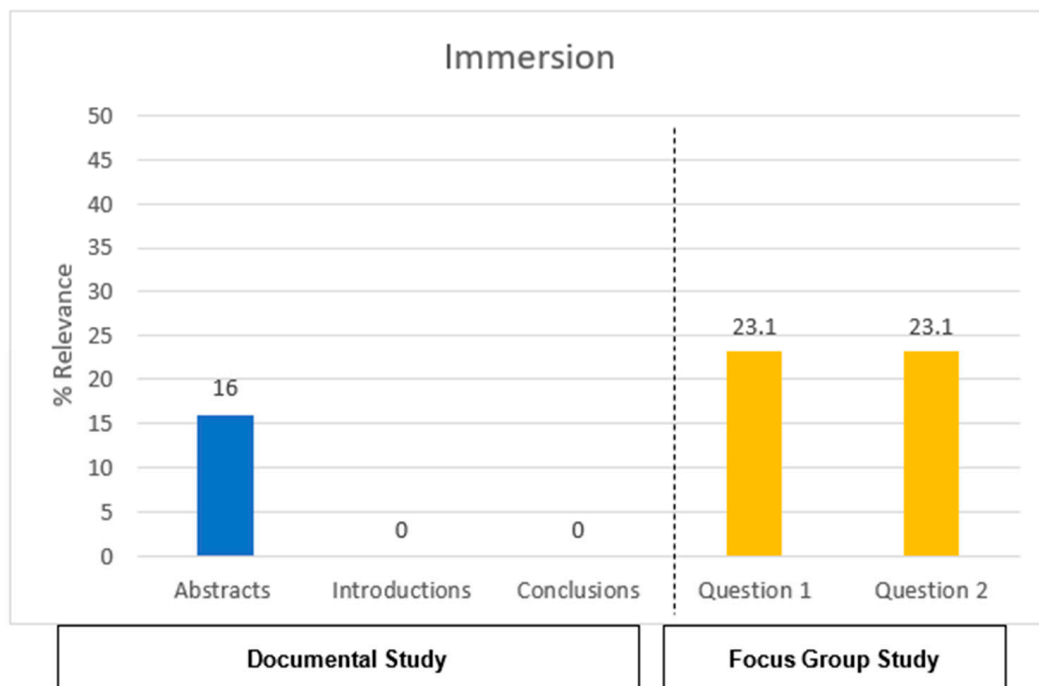**Figure 3.** Comparison graphic—social concept/category.

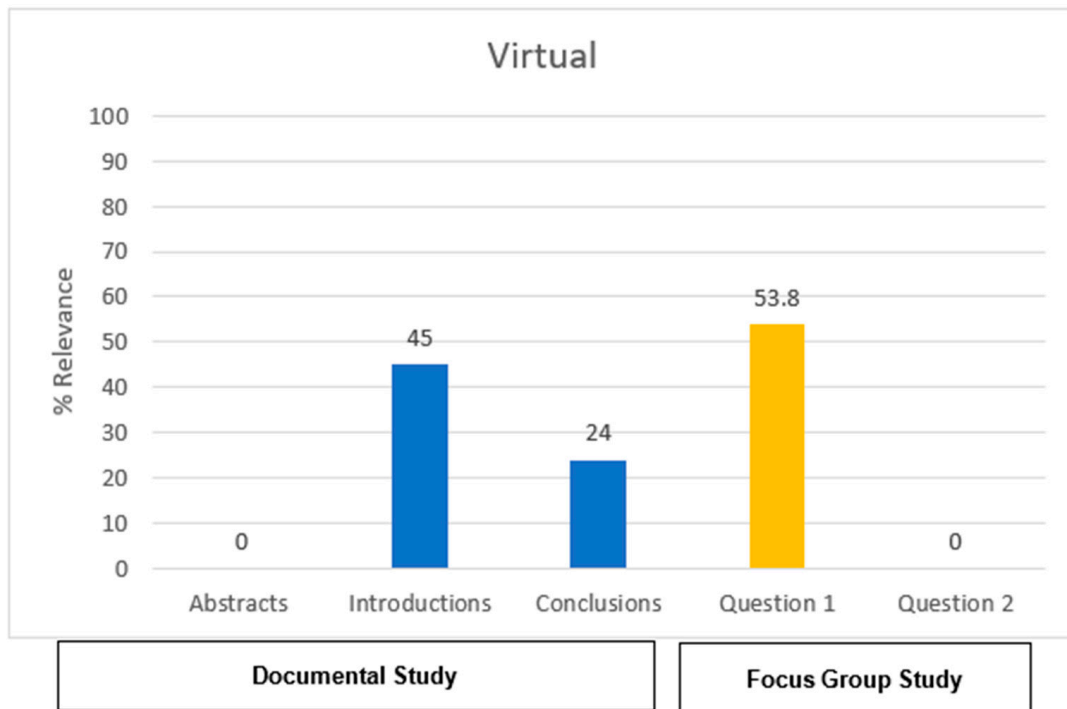**Figure 4.** Comparison graphic—immersive concept/category.

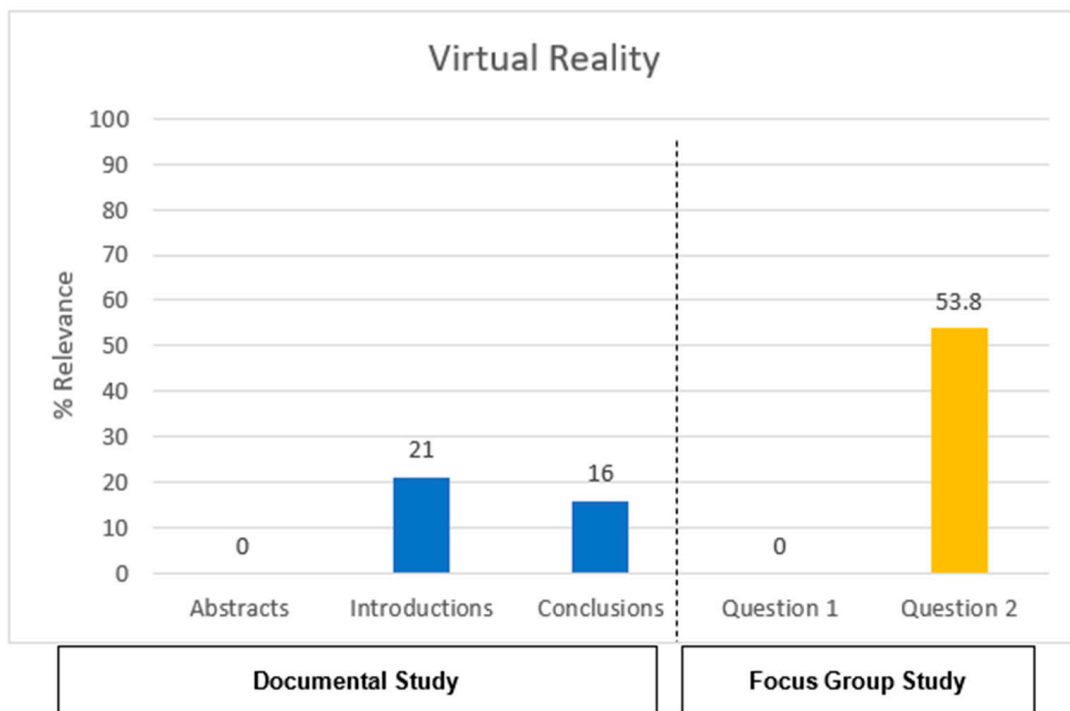**Figure 5.** Comparison graphic—virtual concept/category.

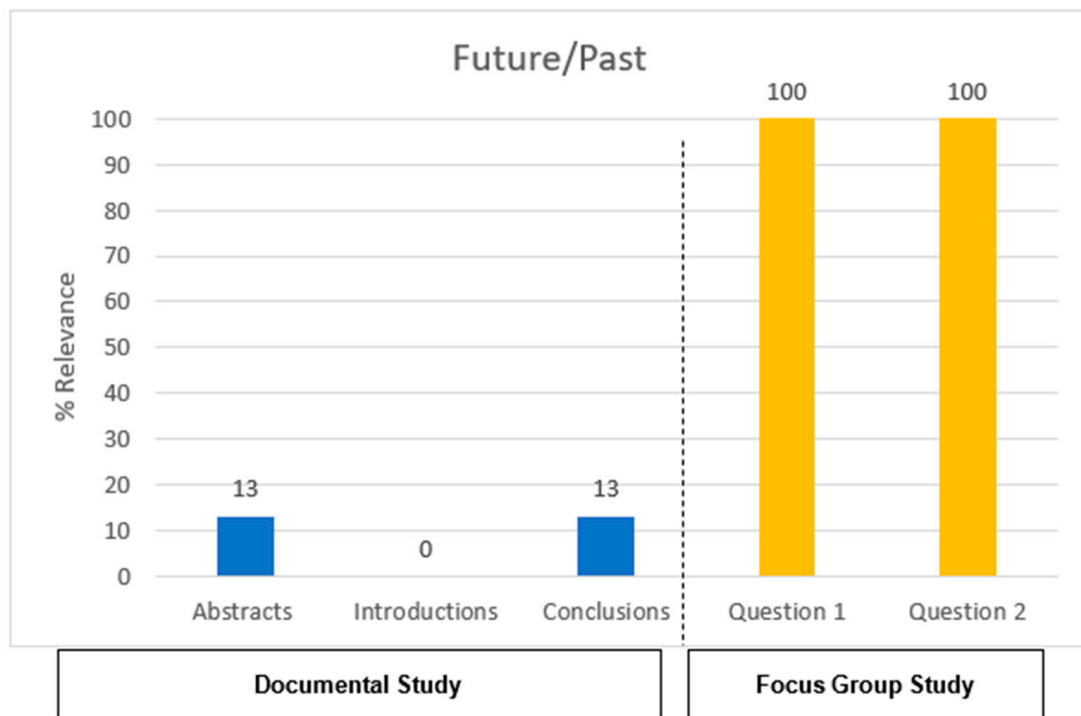**Figure 6.** Comparison graphic—virtual reality concept/category.

Figure 7. Comparison graphic—future/past concepts/categories.

Table 11. Comparison—related concept/categories—social.

From	Concept/Categories	Total	% Relevance
Abstracts	Social	37	16
Introductions	Social	96	13
Conclusions	Social	112	20
Question 1	Socialization	9	69.2
Question 2	Promotes Socialization	9	69.2

Table 12. Comparison—related concept/categories—immersion.

From	Concept/Categories	Total	% Relevance
Abstracts	Immersive	36	16
Introductions		0	0
Conclusions		0	0
Question 1	Immersion	3	23.1
Question 2	Allows immersion	3	23.1

Table 13. Comparison—related concept/categories—virtual.

From	Concept/Categories	Total	% Relevance
Abstracts		0	0
Introductions	Virtual	311	45
Conclusions	Virtual	130	24
Question 1	Virtual	7	53.8
Question 2		0	0

Table 14. Comparison—related concept/categories—virtual reality.

From	Concept/Categories	Total	% Relevance
Abstracts		0	0
Introductions	Virtual Reality	150	21
Conclusions	Virtual Reality	88	16
Question 1		0	0
Question 2	Virtual Reality	7	53.8

Table 15. Comparison—related concept/categories—future and past.

From	Concept/Categories	Total	% Relevance
Abstracts	Future	30	13
Introductions		0	0
Conclusions	Future	74	13
Question 1	Past	13	100
Question 2	Old concept	13	100

It is also possible to verify (Figure 4, Table 12) that the concept/category that both studies mentioned was immersion. Researchers and common adults also agree that the Metaverse is an immersive experience and is considered a characteristic of this concept.

The next common concept/category found was virtual (Figure 5, Table 13). It is a perception of the Metaverse as something virtual or a promoter of a virtual environment or world achieved by technological development.

We can observe in Figure 6 and Table 14 that another common concept/category is virtual reality, stating the necessity of the technology by the Metaverse concept to exist. Creating the virtual environments and worlds characteristic of the Metaverse concept would not be possible without virtual reality.

Another comparison made revealed the distinct categorization of the Metaverse concept as something perceived as future-related (documental study, researchers) and something related from the past (focus group, common adults) (Figure 7, Table 15).

It is interesting to observe this difference. The researchers see the Metaverse concept as something in continuous development. Some aspects or factors will still be achieved, developed, or defined in the future using a futuristic approach. As for the common adults, the Metaverse concept is something from the past or something that was already seen, invented, or presented as an idea or concept, so they do not consider it something new, as the researchers do.

In order to more deeply understand the similarities and differences of these two points of view (scientific and common sense), we also used Voyant Tools. This was created by Stéfan Sinclair from McGill University and Geoffrey Rockwell from the University of Alberta [90].

Voyant Tools is a digital platform designed for the analysis and interpretation of texts [90]. Its primary focus is on providing a quantitative method for learning what is in a text and what it might have to offer [91]. It is particularly useful for uncovering trends and patterns in language use within a text [90,91]. The platform offers a suite of tools for performing text analysis, including tracking word frequency, word collocation, and visualizing trends in texts [90]. It also provides information about the co-location of words within a text [90]. These tools can be used to support scholarly reading and interpretation of texts, making it particularly useful for digital humanities scholars [90].

In addition to providing insights into the content of a text, Voyant Tools also encourages users to think differently about texts [90]. By offering new ways of observing and analyzing text, it helps users to uncover new insights and understanding [90]. This makes it a valuable tool for anyone interested in exploring and understanding the complexities of text [90,91].

For this analysis, we created a text file with all the collected data used in the previous comparison analysis from the Leximancer software and the focus group. To make it easy to distinguish the two studies' findings, we added a "_" at the end of each word that resulted from the focus group responses. After this preparation, we entered all data into Voyant Tools.

Figure 8 is a word cloud, also known as Cirrus in Voyant Tools, consisting of a visual representation of the most frequently used words in a text [90]. The size of each word in the cloud reflects its frequency or significance in the text [90]. Larger words appear more frequently, whereas smaller words are used less often [90]. This visualization can help you quickly identify key themes or concepts in a text [90].

Figure 8. Voyant comparison word cloud.

Figure 8 shows that the most important concepts are creation, reality, virtual, and promotion. Comparing the studies, we can see a connection between the reality concept (reality_ and reality) and the virtual concept (virtual_ and virtual).

There is a clear distinction between the two main clouds.

The gaming point of view sees the Metaverse as a creator of virtual realities that focus on promoting the socialization between users. This virtual reality world can embrace the user's own experiences in these new realities through the immersion concept using characters (avatars). The Metaverse concept is also seen as having its ricks over any other technological innovation. However, his evolution and objective of colocalization between people make gamers accept these new virtual realities.

From the scientific perspective, we can observe a different focus on the Metaverse concept. This focus is centered on the virtual and physical applications that these virtual realities can offer people. These applications are through online platforms, which allow users to interact with other users through the immersion state in these worlds. The scientific view plan is to continue to explore current and future research in order to use data and information to improve the social impact through the applications and platform promoters of these new virtual realities.

So, we can highlight more human relations through a socialization focus on the gamer's view and a more technology-engaging application to create a social impact from the scientific perspective.

The representation of the Metaverse as a virtual reality created for people is consensual.

From the common sense perspective, the Metaverse is seen as a means of creating and promoting socialization through virtual realities. This representation is connected to users' past experiences. From the scientific view, the Metaverse is perceived as a virtual reality that people can access through online platforms or applications. These applications use real information so people can engage socially in the present and in the future.

Figure 9 represents the tendencies of the most frequent words in both study's results. These tendencies provide us with valuable insights regarding the analyzed text, contributing to the identification of the main key themes and patterns. We observe that creation (from the focus group) is linked to users and virtual (from the documental study). This tendency shows us that the Metaverse is seen as a creation of realities by users through the virtual world. A clear distinction is also observed in the two points of view. Both represent the Metaverse as a virtual reality. However, common sense focuses on the creation of these virtual realities, and the scientific view focuses on the virtual reality created for the users.
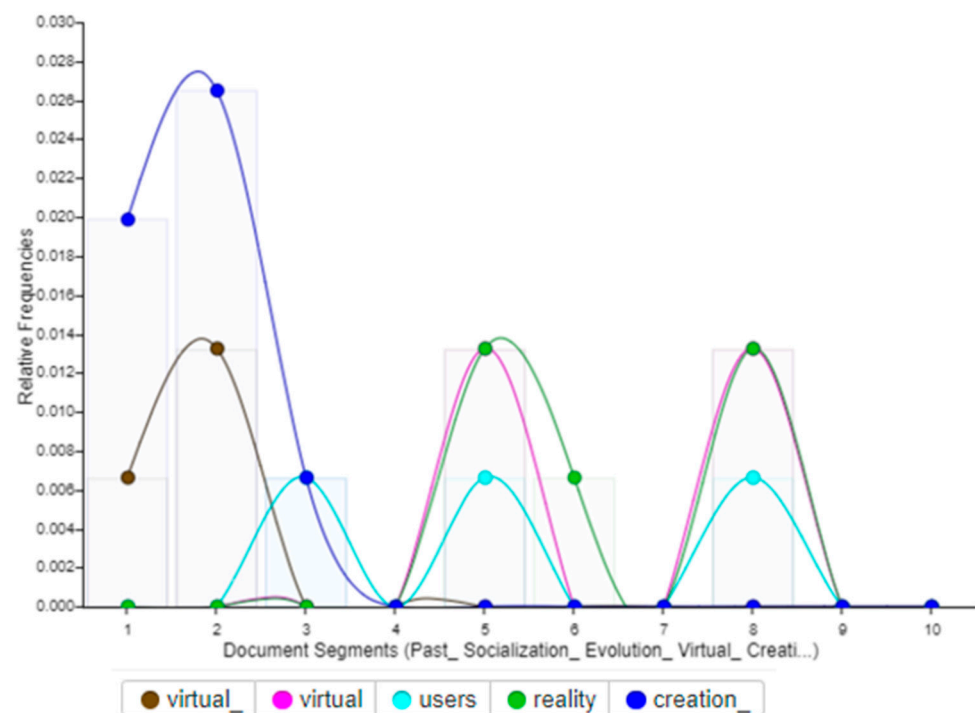

Figure 9. Voyant tendencies graphic.

This tendency shows us that the Metaverse is seen as a creation of realities by users through the virtual world.

5. Discussion

Our findings gave us essential data to verify how close or apart the common representations of adult gamers and scientific representations are, providing important insight into conceptualizing the Metaverse by scientific research and the common perspective. We now understand the representations of the concept through both visions (researchers and common adults), and we can explore how virtual reality is represented and the role of the gaming world within the Metaverse and virtual reality concepts.

Regarding our first objective, comparing the Metaverse representations found in relevant studies (published and indexed publications) with the Metaverse representations among adults (not researchers), we found a joint agreement on concepts/categories, such as social, immersion, virtual, and virtual reality, and a visible disagreement, as a future or past concept. So, the Metaverse is represented as a place where people can interact with each other and where the promotion of socialization exists. There is no surprise in this agreement because the Metaverse can be perceived as a social network [17] combined with

a virtual game world [92], aimed at creating a social community [93] that will shape the future of online social networks [94] because of the ability to allow interactions between users [9] on all sorts of activities, such as social, economic, and cultural [15].

The immersion agreement between both visions is also unsurprising since this concept connects the engagement with the user's interaction. The Metaverse concept is defined as a parallel universe that exists alongside the physical world in an immersive, interactive, and persistent way [8]. The concept of immersion enables perception through sensorimotor contingencies [95] for perception [96], supports natural behaviors [96], enhances the illusion of presence, and allows for a subjective experience [97].

As for the virtual concept/category agreement, it is also something natural due to the technological base of the Metaverse concept because this concept is seen as a 3D universe that is online [7] and a layer between reality and us [11], showing the virtual reality base from the virtual worlds created, where the users can enter and exit anytime [8].

Also, with logic comes the representation of virtual reality as an essential part of the Metaverse concept since this concept is a computer-generated environment [98] responsible for connecting it with the users through avatars [99]. Virtual reality is the medium [99] that creates immersive virtual environments [3] for the Metaverse.

What about the main disagreement between the two perspectives? Common adults see the Metaverse as something related to the past, and scientific researchers see it as something related to the future. The perception of being an old concept among adults can be understood due to its historical context or its reliance on other concepts like gaming and virtual reality [2], or even because they are not completely aware of the developments in the Metaverse and the function of technologies to be revealed (including new hardware devices and emerging software releases). In the future, representation will likely stem from the novelty or increased attention from authors and companies [2]. It is also important to note that the Metaverse still lacks a consensual explanation of what to expect from it in the near future [3].

Our second objective was to verify the most common representation of virtual reality, and we could see an agreement from both perspectives (from researchers and common adults) that this concept is a part of the Metaverse. Because it is considered a 3D shared world based on the physical world [9], for these worlds to exist, they need virtual reality technology to develop and involve the fullness of entering another world using any device [6]. Virtual reality employs computer graphic systems to create an immersive experience within a computer-generated 3D environment [24]. It is also noteworthy that scientific knowledge has a broader vision and more definition of virtual reality. As for the common adult's representation, there is a clear awareness, yet an underestimation, of the importance of the virtual reality concept. However, they need clarification or more understanding regarding the boundaries of the definition between this concept and the Metaverse concept [2].

For our last objective, to verify the importance of gaming within the Metaverse and virtual reality representations, we verify the importance of the social implications and engagement that the gaming world brings to the Metaverse and from the technological evolution of the virtual reality that allows immersion through gaming. The Metaverse has a close and straight relationship with the entertainment concept, and this dimension of leisure can be considered a blend of online games and social networking [13]. As previously mentioned in the Metaverse brief history (in the Section 2), the games and the social networks are the genesis of this concept, highlighting the gaming world's position as the founder of the Metaverse [2].

The Metaverse has only about two decades of history, so it still needs a more perfect or final definition [2,3]. Scientific researchers continue to improve and develop their creativity, experience, and insights regarding a definition in continuous construction, exploring new boundaries and limitations as common knowledge uses only experience from what exists and which is tangible to be experienced.

6. Research Limitations and Future Research

For the documental study, a possible limitation is the keywords used for the research papers; having fewer could have opened the range of papers found. Considering the focus group study, we admit that more interviews could give more data. We requested that all participants use a camera to prevent reduced non-verbal communication in an online focus group session. It is also essential to refer to the nationality of the gamers interviewed (Portuguese), so it should be considered that other nationalities, age groups, and ethnicities could have resulted in different findings, considering the knowledge, lack, or confusion regarding the concepts discussed.

As for future research, we can state some potential gaps to be considered. Comprehensive review articles: despite the exponential growth in Metaverse research since 2020, there is still a lack of comprehensive review articles using bibliometric techniques. Future research could focus on creating more systematic and in-depth reviews to understand the current state of Metaverse research. Collaboration and advancement: the Metaverse field would benefit from increased collaboration among researchers. Investigating interdisciplinary aspects and fostering knowledge exchange could advance the field further. Future studies might explore collaborative efforts across academia, industry, and other sectors. Research questions: our study presents 27 research questions for future investigation. These questions span various facets of the Metaverse, including education, healthcare, tourism, and more. Researchers can investigate these questions to uncover new insights and address existing gaps. Reality perception and ontology: The question of whether reality is real remains intriguing. Future research can discover the ontological implications of the Metaverse, considering its impact on our perception of reality. Investigating the nature of reality within virtual environments could yield valuable insights. Humanization and technology integration: bridging the perspectives of humanization (common knowledge) and technological enhancement (scientific knowledge) is crucial. Researchers could explore ways to harmonize these viewpoints, ensuring that the Metaverse evolves with both human experience and technological innovation. The Metaverse presents a remarkable and captivating opportunity for interdisciplinary exploration. By addressing these research gaps, scholars can actively shape its trajectory and unlock its boundless potential.

7. Conclusions

It is incredible to see the evolution, looking into its history, of how a concept emerges and evolves. In this case, it began as a simple idea constructed to transport users to a possible and credible new reality through a simple book by Neal Stephenson, to an extraordinary evolution and development that allowed a simple book to focus us on our natural curiosity and creativity to transform it into a new reality.

The study acknowledges the continuous evolution of the Metaverse's definition, contributing to a broader understanding of this dynamic digital realm. Overall, this study significantly enhances our understanding of the Metaverse by bridging the gap between common and scientific perspectives, emphasizing the interplay between gaming, virtual reality, and social dimensions, and recognizing the concept's historical and ongoing development.

Studying the Metaverse can benefit a wide range of individuals and groups. Researchers and academics can use your findings to further explore the Metaverse, its applications, and its impact on society, providing a foundation for future research and theoretical development. Game developers and tech companies can create more immersive and socially engaging virtual environments by understanding the common and scientific perspectives of the Metaverse, using your insights into user experiences and expectations to design better products. Educators and students can use your study as a resource for teaching and learning about the Metaverse, virtual reality, and digital interaction, offering a comprehensive overview of the concept's evolution and current state. Policymakers and regulators can inform policies and regulations related to virtual environments, ensuring they are safe, inclusive, and beneficial for all users. The general public and enthusiasts,

from gamers to tech enthusiasts, can gain a deeper understanding of how the Metaverse is perceived and represented, bridging the gap between everyday experiences and scientific knowledge. Social scientists and psychologists can explore the social implications and psychological effects of the Metaverse, using your findings to understand how virtual interactions influence real-world behavior and relationships. By addressing both common and scientific perspectives, the study provides a holistic view of the Metaverse, making it a valuable resource for a diverse audience.

As we recall our research question (To what extent may the Metaverse scientific representations vary from the Metaverse common perceptions?), we may now sum up that the answer lies in experience and knowledge.

From this study's findings, it is important to state the theoretical implications regarding this concept and the two compared views. When conceptualizing the Metaverse, our study provides essential data by comparing common representations of adult gamers with scientific depictions of the Metaverse. This insight is valuable for conceptualizing the Metaverse from research and everyday perspectives. Understanding key concepts (such as social, immersion, virtual, and virtual reality) highlights the Metaverse as a place for social interaction and socialization. The agreement on immersion and virtual reality concepts aligns with the Metaverse's immersive, interactive, and persistent nature. Acknowledging the divergence between temporal perspectives enriches our understanding of this dynamic digital realm. As for gaming's role and historical context, the investigation of gaming within the Metaverse sheds light on its social implications and engagement. Recognizing the Metaverse's close relationship with entertainment emphasizes its multifaceted nature, combining online games and social networking. Referencing the Metaverse's origins in games and social networks strengthens your study, acknowledging gaming as the genesis of this evolving concept. Furthermore, acknowledging the ongoing definition of development aligns with the continuous construction of knowledge, exploring boundaries and limitations in the Metaverse's definition. Our research contributes significantly to unraveling the Metaverse's complexities and emphasizing gaming's impact, bridging temporal perspectives; emphasizing the interplay between gaming, virtual reality, and social dimensions; recognizing historical context; and acknowledging ongoing definition development.

Our findings show that these two perspectives or representations are relatively close regarding the implications of the Metaverse concept but diverge in how reality is seen.

Common knowledge can only rely on their experience and daily practice, mainly focused on how they feel, think, or experience what is available. The Metaverse is seen as a promoter of socialization, so this point of view focuses on promoting human interaction and the possibilities of relation with others within the virtual realities created by the Metaverse. A common gamer's point of view is observed, but past and present experiences determine the level of engagement and perception of these virtual realities.

As for scientific knowledge, this is focused on the current applications and platforms of the Metaverse that the user will use socially. So, it is a technological point of view that is wanted to explore the engaging interactions between the user and these virtual realities, focusing on understatement and creating more knowledge understanding so it can be used to better transform the typical experiences or, with a bit more research and definition, to impact their knowledge. It looks into the future, considering what can be done and explored: What will it achieve? How can it be improved? New developments? How can it be more immersive? More real?

As for the similarities, we can see knowledge of the Metaverse as the creator or responsible for these virtual realities, and perhaps this is the only reality that exists and is possible for these two perspectives—and this is neither good nor bad. It is only a matter of perception, which brings us to a recurring question: is reality real?

The two studied representations each have merit and influence concerning the evolution of the Metaverse concept. One is searching for a humanization of the Metaverse, and the other is looking to improve engagement through technology. Joining these two perspectives will permit extraordinary events to be accomplished, allowing the Metaverse,

as this unique and beautiful flower, to bloom in this idea of what it will be in the future. Life's unpredictability often leads to the most amazing outcomes. We can expect to witness incredible things if we collaborate and work towards a shared vision. Or, as Einstein would say: "The future promises us the most amazing experiences".

As researchers, we aim to discover new things; understand what, how, and why; and see the limitations or boundaries of possible new things or new aspects of the same thing that were considered. However, according to the common perception, discoveries often come as a finished product made for them, so what matters the most is the experience. So, we can understand the aim for the level-up experience and development from the Metaverse concept, where we have to prepare for the new challenges that come from each new scenario to reach the end goal.

References

1. Howes, L. 20 Lessons from Walt Disney on Entrepreneurship, Innovation and Chasing Your Dreams. Available online: https://www.forbes.com/sites/lewishowes/2012/07/17/20-business-quotes-and-lessons-from-walt-disney/ (accessed on 19 October 2023).
2. Oliveira, A.; Cruz, M. Virtually Connected in a Multiverse of Madness?—Perceptions of Gaming, Animation, and Metaverse. *Appl. Sci.* **2023**, *13*, 8573. [CrossRef]
3. Cruz, M.; Oliveira, A.; Pinheiro, A. Meeting Ourselves or Other Sides of Us?—Meta-Analysis of the Metaverse. *Informatics* **2023**, *10*, 47. [CrossRef]
4. Cruz, M.; Oliveira, A.; Pinheiro, A. Flowing through Virtual Animated Worlds—Perceptions of the Metaverse. In Proceedings of the 2022 Euro-Asia Conference on Frontiers of Computer Science and Information Technology (FCSIT), Beijing, China, 16–18 December 2022; pp. 241–245.
5. Ubieto, J.R.; Moliner, L.A. *¿Bienvenido Metaverso?: Presencia, Cuerpo y Avatares en la era Digital: 2080*; Ned edição.; Ned Ediciones: Barcelona, Spain, 2022; ISBN 978-84-18273-80-3.
6. Burrows, G. *Your Life in the Metaverse*; Really Interesting Books: Torino, Italy, 2022.
7. Garrido, L. *EL METAVERSO EXPLICADO: ¿Qué es el Metaverso y Cómo Funciona? ¿Es Realmente el Futuro de la Convivencia Humana?* Independently Published: Torraza Piemonte, Italy, 2022; ISBN 9798807825971.
8. Jaimez, A. *Metaverse: The Final Frontier of Cyberspace*; Independently Published: Torraza Piemonte, Italy, 2023; ISBN 9798853750890.
9. Mitchell, A.; Murphy, J.; Owens, D.; Khazanchi, D.; Zigurs, I. Avatars, People, and Virtual Worlds: Foundations for Research in Metaverses. *J. AIS* **2009**, *10*, 90–117. [CrossRef]
10. A Quote by William Gibson. Available online: https://www.goodreads.com/quotes/681-the-future-is-already-here-it-s-just-not-evenly (accessed on 22 August 2023).
11. Alang, N. Opinion | Facebook Wants to Move to 'the Metaverse'—Here's What That Is, and Why You Should Be Worried. Available online: https://www.thestar.com/business/opinion/2021/10/23/facebook-wants-to-move-to-the-metaverse-heres-what-that-is-and-why-you-should-be-worried.html (accessed on 5 February 2023).
12. Damar, M. Metaverse Shape of Your Life for Future: A Bibliometric Snapshot. *J. Metaverse* **2021**, *1*, 1–8.
13. Ramesh, U.V.; Harini, A.; Gowri, C.S.D.; Durga, K.V.; Druvitha, P. Kumar Metaverse: Future of the Internet. *Int. J. Res. Publ. Rev.* **2022**, *3*, 93–97.
14. Guidi, B.; Michienzi, A. The Social Impact of NFTs in the Metaverse Economy. In Proceedings of the 2023 ACM Conference on Information Technology for Social Good, Lisbon, Portugal, 6–8 September 2023; Association for Computing Machinery: New York, NY, USA, 2023; pp. 428–436.
15. Hendaoui, A.; Limayem, M.; Thompson, C. 3D Social Virtual Worlds: Research Issues and Challenges. *IEEE Internet Comput.* **2008**, *12*, 88–92. [CrossRef]

16. Mystakidis, S. Metaverse. *Encyclopedia* **2022**, *2*, 486–497. [CrossRef]
17. Heim, M. *Virtual Realism*; Oxford University Press: Oxford, UK, 2000; ISBN 978-0-19-513874-0.
18. Marczewski, A. *Even Ninja Monkeys Like to Play: Gamification, Game Thinking & Motivational Design*; Gamified UK: Addlestone, UK, 2015.
19. Kemeç, A. From Reality to Virtuality: Re-Discussing Cities with the Concept of Metaverse. *Int. J. Manag.* **2022**, *4*, 12–20. [CrossRef]
20. Ffiske, T. *The Metaverse: A Professional Guide: An Expert's Guide to Virtual Reality (VR), Augmented Reality (AR), and Immersive Technologies*; Independently Published: Chicago, IL, USA, 2022; ISBN 9798403364522.
21. Chalmers, D.J. *Reality+—Virtual Worlds and the Problems of Philosophy*; Norton: New York, NY, USA, 2022.
22. Innocente, C.; Ulrich, L.; Moos, S.; Vezzetti, E. A Framework Study on the Use of Immersive XR Technologies in the Cultural Heritage Domain. *J. Cult. Herit.* **2023**, *62*, 268–283. [CrossRef]
23. Yoh, M.-S. The Reality of Virtual Reality. In Proceedings of the Seventh International Conference on Virtual Systems and Multimedia, Berkeley, CA, USA, 25–27 October 2001; pp. 666–674.
24. Pan, Z.; Cheok, A.D.; Yang, H.; Zhu, J.; Shi, J. Virtual Reality and Mixed Reality for Virtual Learning Environments. *Comput. Graph.* **2006**, *30*, 20–28. [CrossRef]
25. Sherman, W.R.; Craig, A.B. *Understanding Virtual Reality: Interface, Application, and Design*; Morgan Kaufmann: Burlington, MA, USA, 2019; ISBN 978-0-12-801038-9.
26. Steuer, J. Defining Virtual Reality: Dimensions Determining Telepresence. *J. Commun.* **1992**, *42*, 73–93. [CrossRef]
27. Jian, S.; Chen, X.; Yan, J. From Online Games to "Metaverse": The Expanding Impact of Virtual Reality in Daily Life. In *Proceedings of the Culture and Computing*; Rauterberg, M., Ed.; Springer International Publishing: Cham, Switzerland, 2022; pp. 34–43.
28. Biocca, F.; Levy, M.R. *Communication in the Age of Virtual Reality*; Routledge: New York, NY, USA, 2010.
29. Huynh-The, T.; Pham, Q.-V.; Pham, X.-Q.; Nguyen, T.T.; Han, Z.; Kim, D.-S. Artificial Intelligence for the Metaverse: A Survey. *Eng. Appl. Artif. Intell.* **2022**, *117*, 105581. [CrossRef]
30. Brown, E.; Cairns, P. *A Grounded Investigation of Game Immersion*; Association for Computing Machinery: New York, NY, USA, 2004; p. 1300. ISBN 1-58113-703-6.
31. Schroeder, R. Defining Virtual Worlds and Virtual Environments. *J. Virtual Worlds Res.* **2008**, *1*, 1–3. [CrossRef]
32. Benford, S.; Greenhalgh, C.; Hopkins, G.; Brown, C.; Koleva, B. Understanding and Constructing Shared Spaces with Mixed-Reality Boundaries. *ACM Trans. Comput.-Hum. Interact.* **1998**, *5*, 185–223. [CrossRef]
33. Zheng, J.M.; Chan, K.W.; Gibson, I. Virtual Reality. *IEEE Potentials* **1998**, *17*, 20–23. [CrossRef]
34. Xiong, J.; Hsiang, E.-L.; He, Z.; Zhan, T.; Wu, S.-T. Augmented Reality and Virtual Reality Displays: Emerging Technologies and Future Perspectives. *Light Sci. Appl.* **2021**, *10*, 216. [CrossRef] [PubMed]
35. Cruz, M.; Oliveira, A. Hi Doctor Strange! Play it again, and discover the Metaverse—Perceptions of the Metaverse among gamers. In Proceedings of the 2023 18th Iberian Conference on Information Systems and Technologies (CISTI), Aveiro, Portugal, 20–23 June 2023.
36. Sicart, M. *Play Matters*; Reprint Edição; MIT Press: Cambridge, MA, USA; London, UK, 2017; ISBN 978-0-262-53451-2.
37. Suits, B. *The Grasshopper: Games, Life and Utopia*; University of Toronto Press: Toronto, ON, Canada, 2005.
38. Rollings, A.; Morris, D. *Game Architecture and Design*; Education; New Riders Publishing: Indianapolis, IN, USA, 2004.
39. Schell, J. *The Art of Game Design: A book Lenses*; CRC Press: Boca Raton, FL, USA, 2008.
40. Salen, K.; Zimmerman, E. *Rules of Play: Fundamentals of Game Design*; The MIT Press Cambridge: London, UK, 2004.
41. Huizinga, J. *Homo Ludens: A Study of the Paly Element in Culture*; Angelica Press: London, UK, 2016.
42. Ross, E. *Gamish: A Graphic History of Gaming*; Penguin Books: New York, NY, USA, 2020.
43. Miller, T. Gaming for Beginners. *Games Cult.* **2006**, *1*, 5–12. [CrossRef]
44. Madigan, J. *Getting Gamers: The Psychology of Video Games and Their Impact on the People who Play Them*; Reprint Edição; New Publisher: Lanham, MD, USA, 2021; ISBN 978-1-5381-2133-7.
45. Kirriemuir, J.; Mcfarlane, A. *Literature Review in Games and Learning*; University of Bristol: Bristol, UK, 2004.
46. Kerr, A. *The Business and Culture of Digital Games: Gamework/Gameplay*; SAGE Publications Ltd.: London, UK, 2006.
47. Wolf, M.J.P. *The Video Game Explosion: A History from PONG to PlayStation and Beyond*; Bloomsbury Academic: London, UK, 2008; ISBN 978-0-313-33868-7.
48. Yee, N. Motivations for Play in Online Games. *CyberPsychology Behav.* **2006**, *9*, 772–775. [CrossRef]
49. Williams, D.; Yee, N.; Caplan, S.E. Who Plays, How Much, and Why? Debunking the Stereotypical Gamer Profile. *J. Comput.-Mediat. Commun.* **2008**, *13*, 993–1018. [CrossRef]
50. Barr, M.; Copeland-Stewart, A. Playing Video Games during the COVID-19 Pandemic and Effects on Players' Well-Being. *Games Cult.* **2022**, *17*, 122–139. [CrossRef]
51. Pinheiro, A.; Oliveira, A.; Alturas, B. Playing and Socializing—Adults' Perceptions of the FIFA Digital Game. *Informatics* **2023**, *10*, 2. [CrossRef]
52. Morais, A.; Oliveira, A.; Pinheiro, A. Look at Me Playing?—The eSports Importance on Consumers Emotions. In Proceedings of the 2022 Euro-Asia Conference on Frontiers of Computer Science and Information Technology (FCSIT), Beijing, China, 16–18 December 2022; pp. 246–250.
53. Isbister, K. *How Games Move Us (Playful Thinking): Emotion by Design*; Reprint Edição; MIT Press: Cambridge, MA, USA; London, UK, 2017; ISBN 978-0-262-53445-1.

54.   Mandryk, R.L.; Inkpen, K.M. Physiological Indicators for the Evaluation of Co-Located Collaborative Play. In Proceedings of the 2004 ACM Conference on Computer-Supported Cooperative Work (CSCW 2004), Chicago, IL, USA, 6–10 November 2004; pp. 6–10. [CrossRef]

55.   Macaranas, A.; Venolia, G.; Inkpen, K.; Tang, J. Sharing Experiences over Video: Watching Video Programs Together at a Distance. In Proceedings of the IFIP International Federation for Information Processing 2013, Cape Town, South Africa, 2–6 September 2013; pp. 73–90. [CrossRef]

56.   Damaševičius, R.; Maskeliūnas, R.; Blažauskas, T. Serious Games and Gamification in Healthcare: A Meta-Review. *Information* **2023**, *14*, 105. [CrossRef]

57.   Michalski, S.C.; Gallomarino, N.C.; Szpak, A.; May, K.W.; Lee, G.; Ellison, C.; Loetscher, T. Improving Real-World Skills in People with Intellectual Disabilities: An Immersive Virtual Reality Intervention. *Virtual Real.* **2023**, *27*, 3521–3532. [CrossRef] [PubMed]

58.   Mitsea, E.; Drigas, A.; Skianis, C. VR Gaming for Meta-Skills Training in Special Education: The Role of Metacognition, Motivations, and Emotional Intelligence. *Educ. Sci.* **2023**, *13*, 639. [CrossRef]

59.   Jamali, H.R.; Nikzad, M. Article Title Type and Its Relation with the Number of Downloads and Citations. *Scientometrics* **2011**, *88*, 653–661. [CrossRef]

60.   Cretchley, J.; Rooney, D.; Gallois, C. Mapping a 40-Year History with Leximancer: Themes and Concepts in the Journal of Cross-Cultural Psychology. *J. Cross-Cult. Psychol.* **2010**, *41*, 318–328. [CrossRef]

61.   Lawrence, S.; Lee Giles, C.; Bollacker, K. Digital Libraries and Autonomous Citation Indexing. *Computer* **1999**, *32*, 67–71. [CrossRef]

62.   Vintzileos, A.M.; Ananth, C.V. How to Write and Publish an Original Research Article. *Am. J. Obstet. Gynecol.* **2010**, *202*, 344.e1–344.e6. [CrossRef] [PubMed]

63.   Aspers, P.; Corte, U. What Is Qualitative in Qualitative Research. *Qual. Sociol.* **2019**, *42*, 139–160. [CrossRef]

64.   Becker, H.S. *Evidence*; University of Chicago Press: Chicago, IL, USA, 2017; ISBN 978-0-226-46637-8.

65.   Friese, S. *Qualitative Data Analysis with ATLAS.Ti*, 1st ed.; SAGE Publications Ltd.: Los Angeles, CA, USA, 2014; ISBN 978-0-85702-131-1.

66.   Flick, U. *An Introduction to Qualitative Research*, 7th ed.; SAGE Publications Ltd.: Thousand Oaks, CA, USA, 2022; ISBN 978-1-5297-8132-8.

67.   Kelle, U. *Computer-Assisted Analysis of Qualitative Data*; Paper Prepared for the Discussion Paper Series of the LSE Methodology Institute; Sage: London, UK, 2004.

68.   Welsh, E. Dealing with Data: Using NVivo in the Qualitative Data Analysis Process. *Forum Qual. Sozialforschung/Forum Qual. Soc. Res.* **2002**, *3*. [CrossRef]

69.   Weitzman, E. Software and Qualitative Research. In *Handbook of Qualitative Research*; Densin, N., Lincoln, Y.S., Eds.; Sage: London, UK, 2000; pp. 803–820.

70.   Seale, C. Using Computers to Analyse Qualitative Data. In *Doing Qualitative Research: A Practical Handbook*; Silverman, D., Ed.; Sage: London, UK, 2000; pp. 154–174.

71.   Sotiriadou, P.; Brouwers, J.; Le, T.-A. Choosing a Qualitative Data Analysis Tool: A Comparison of NVivo and Leximancer. *Ann. Leis. Res.* **2014**, *17*, 218–234. [CrossRef]

72.   Smith, A.E.; Humphreys, M.S. Evaluation of Unsupervised Semantic Mapping of Natural Language with Leximancer Concept Mapping. *Behav. Res. Methods* **2006**, *38*, 262–279. [CrossRef] [PubMed]

73.   Zhang, H.; Zang, Z.; Zhu, H.; Uddin, M.I.; Amin, M.A. Big Data-Assisted Social Media Analytics for Business Model for Business Decision Making System Competitive Analysis. *Inf. Process. Manag.* **2022**, *59*, 102762. [CrossRef]

74.   Rodrigues, L.F.; Oliveira, A.; Rodrigues, H. *Main Gamification Concepts: A Systematic Mapping Study*; Elsevier: Amsterdam, The Netherlands, 2019; pp. 1–13.

75.   Leximancer FAQs—Displays and Outputs. Available online: https://www.leximancer.com/faqs-leximancer-displays-and-outputs (accessed on 3 April 2024).

76.   Silverman, D. *Doing Qualitative Research*, 6th ed.; SAGE Publications Ltd.: Thousand Oaks, CA, USA, 2022; ISBN 978-1-5297-6900-5.

77.   Kriukow, J. Sample Size in Qualitative Research—Qualitative Researcher Dr Kriukow. Available online: https://drkriukow.com/how-to-choose-the-right-sample-size-for-a-qualitative-study-and-convince-your-supervisor-that-you-know-what-youre-doing/ (accessed on 29 June 2023).

78.   Kriukow, J. Sample Size in Qualitative Research. 2019. Available online: https://www.youtube.com/watch?v=2JeGo3r21vw (accessed on 29 June 2023).

79.   Guest, G.; Namey, E.; McKenna, K. How Many Focus Groups Are Enough? Building an Evidence Base for Nonprobability Sample Sizes. *Field Methods* **2017**, *29*, 3–22. [CrossRef]

80.   Hennink, M.M.; Kaiser, B.N.; Weber, M.B. What Influences Saturation? Estimating Sample Sizes in Focus Group Research. *Qual. Health Res.* **2019**, *29*, 1483–1496. [CrossRef] [PubMed]

81.   Silverman, D. *Qualitative Research*, 5th ed.; SAGE Publications Ltd.: Thousand Oaks, CA, USA, 2021; ISBN 978-1-5297-1297-1.

82.   Acocella, I.; Cataldi, S. *Using Focus Groups: Theory, Methodology, Practice*; Sage: London, UK, 2021; ISBN 978-1-5264-4561-2.

83.   Morgan, D.L. *Sucessful Focus Group*; Sage: London, UK, 1993.

84.   Blumer, H. *Symbolic Interactionism: Perspective and Method*; 1. paperback print., renewed; University of California Press: Berkeley, CA, USA, 1969; ISBN 978-0-520-05676-3.

85.   Krueger, R.A. *Focus Group*; Sage: London, UK, 1994.

86. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews. *BMJ* **2021**, *372*, n71. [CrossRef] [PubMed]

87. Page, M.J.; Moher, D.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. PRISMA 2020 Explanation and Elaboration: Updated Guidance and Exemplars for Reporting Systematic Reviews. *BMJ* **2021**, *372*, n160. [CrossRef] [PubMed]

88. Lakens, D. Sample Size Justification. *Collabra Psychol.* **2022**, *8*, 33267. [CrossRef]

89. Fingerhut, J.; Moeyaert, M. Selecting and Justifying Quantitative Analysis Techniques in Single-Case Research through a User-Friendly Open-Source Tool. *Front. Educ.* **2022**, *7*. [CrossRef]

90. Sinclair, S.; Rockwell, G. Getting Started—Voyant Tools Help. 2016. Available online: https://voyant-tools.org/docs/#!/guide/start (accessed on 20 April 2024).

91. Shvetsova, T.; Dulova, S.; Shakhova, V. Voyant Tools as an Analysis Instrument of Pierre-Louis Le Roy's Text. *E3S Web Conf.* **2023**, *420*, 06008. [CrossRef]

92. Guidi, B.; Michiensi, A. Social Games and Blockchain: Exploring the Metaverse of Decentraland. In Proceedings of the 2022 IEEE 42nd International Conference on Distributed Computing Systems Workshops (ICDCSW), Bologna, Italy, 10 July 2022; pp. 199–204.

93. Baysden, E.; Mendoza, N.; Callender, C.; Deng, Z.; Thompson, D. Teen Reactions to a Self-Representational Avatar: A Qualitative Exploration. *J. Sport Health Sci.* **2021**, *11*, 157–163. [CrossRef]

94. Cai, Y.; Llorca, J.; Tulino, A.M.; Molisch, A.F. Compute- and Data-Intensive Networks: The Key to the Metaverse. In Proceedings of the 2022 1st International Conference on 6G Networking (6GNet), Paris, France, 6–8 July 2022.

95. Slater, M.; Sanchez-Vives, M.V. Enhancing Our Lives with Immersive Virtual Reality. *Front. Robot. AI* **2016**, *3*, 1–74. [CrossRef]

96. Slater, M. Immersion and the Illusion of Presence in Virtual Reality. *Br. J. Psychol.* **2018**, *109*, 431–433. [CrossRef]

97. Zahiu, A. I, Avatar: Towards an Extended Theory of Selfhood in Immersive VR. *InfTars* **2019**, *19*, 147. [CrossRef]

98. Mcgonigal, J. *Reality Is Broken: Why Games Make Us Better and How They Can Change the World*; Random House UK: London, UK, 2012; ISBN 978-0-09-954028-1.

99. Han, E.; Miller, M.R.; Ram, N.; Nowak, K.L.; Bailenson, J.N. Understanding Group Behavior in Virtual Reality: A Large-Scale, Longitudinal Study in the Metaverse. In Proceedings of the 72nd Annual International Communication Association Conference, Paris, France, 26–30 May 2022.