

“This Is So Cool”: A Phenomenological Study on Virtual Reality Novelty

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Abstract

Virtual reality (VR) technology often provides immersive experiences through which consumers can better understand how a product works or why they should invest in a product (Dennis, 2010). Consumers who use VR are often able to simulate authentic experiences that feel “real-life” (Diemer et al., 2015). VR experience has also been associated with the characteristics of immersion, presence, interactivity (Mutterlein, 2018), and vividness (Van Kerrebroeck et al., 2017). Novelty and first-time VR use have been investigated to some extent in research on education (Adams et al., 2009; Merchant et al., 2014), but VR novelty has not been studied in-depth in other disciplines. This study takes a phenomenological approach, which uses in-depth descriptions of participants’ experiences of a real-life phenomenon to understand those experiences better and lay the foundation for future studies (Cresswell & Poth, 2018). The research uses a sample of 27 participants who experienced VR for the first time and answered open-ended questions concerning that experience, in addition to demographic questions. Participants were given 30 minutes each to select from various VR games and YouTube 360 videos in their first-ever encounter with using a VR headset. In-depth field notes were taken during the experience by the researchers, and post-experience interview prompts for participants were based on previous studies on VR immersion and flow theory. This exploratory, phenomenological study provides three themes that emerged from the data: disorientation and immersion, surprise, and a gradual release on reality. Possibilities for future research and the addition of novelty to the technology acceptance model are discussed

Keywords: virtual reality, flow theory, immersion, novelty, new technology

Introduction

Affordable, stand-alone virtual reality (VR) technology may prove to be one of the most innovative products of the early twenty-first century. VR is commonly defined as “an artificial environment which is experienced through sensory stimuli (such as sights and sounds) provided by a computer and in which one’s actions partially determine what happens in the environment” (Virtual Reality, 2020). VR technology often provides immersive experiences through which consumers can better understand how a product works or why they should invest in a product (Dennis, 2010). Consumer-ready and affordable stand-alone headsets have recently found their footing and are projected to continue to gain a considerable market; in fact, not only are VR headsets used for gaming and entertainment, but they may also be used for persuasive purposes in marketing and health communication (Boas, 2013; GVR, 2019; Park & Kim, 2021).

Research has focused on the VR experience in several areas. Consumers who use VR can often simulate authentic experiences that feel “real-life” (Diemer et al., 2015). Additionally, VR experience has been associated with the characteristics of immersion and presence (Mutterlein, 2018) as well as vividness (Van Kerrebroeck et al., 2017). Immersion is a critical concept in VR studies, and Mutterlein (2018) defines immersion in the categories of fluency (e.g., the participant finds concentrating easy to accomplish) and absorption (e.g., the participant does not notice time passing). Further, Mutterlein ties immersion to flow theory (or optimal experience) (Csikszentmihalyi, 2008). Research into flow posits that experiencing a flow state requires participating in an activity that is intrinsically motivating or rewarding (Nakamura & Csikszentmihalyi, 2002). While the goals set out by VR users are vastly different from those of the rock climbers and painters Csikszentmihalyi first interviewed to develop flow, user goals exist, nonetheless (Park & Kim, 2021).

Novelty refers to having not experienced or encountered stimuli before (Barto et al., 2013), and first-time use of VR technology may qualify as such an instance. The concept of novelty in relation to first-time VR use has also been investigated to some extent in research on education (Adams et al., 2009; Merchant et al., 2014), but VR novelty has not been studied in-depth in many other disciplines. Further, the connection between flow theory (Csikszentmihalyi, 2008) and immersion (Mutterlein, 2018) has not been examined in relation to the concept of novelty in VR use. Without an in-depth study of first-time users’ VR experience, research concerning VR may miss an opportunity to understand the concept of novelty and its influences on users in relation to other critical concepts such as

immersion and flow; also, time is limited because VR technology may shortly become more ubiquitous due to market availability (Boas, 2013; GVR, 2019). In order to better operationalize the concept in future studies, novelty requires in-depth analysis. Therefore, this exploratory study will use a phenomenological approach to fill the gap in knowledge to build a foundation for future research that focuses on the influence of novel effects of VR technology in marketing, entertainment, and human experience by outlining how novelty can be defined and conceptualized.

Literature Review

The literature will be reviewed in the following areas to build a foundation for the questions used in this research approach. First, an examination of flow theory and its connection to more modern technology such as VR is examined. Secondly, concepts frequently connected to VR use and experience—such as immersion, presence, and vividness—are examined in regards to their relationship to both novelty and flow. Finally, studies that examine VR novelty in specific situations are reviewed.

Flow Theory

Csikszentmihalyi first proposed flow theory in 1965 and was further expanded on by Csikszentmihalyi and Csikszentmihalyi in a seminal book in 1988. They studied various individuals, including rock climbers, dancers, and chess players who “emphasized enjoyment as the main reason for pursuing an activity” (Nakamura & Csikszentmihalyi, 2002, p. 89). Flow is typically found in people who find deep enjoyment in an activity and when “an organized set of challenges and a corresponding set of skills result in optimal experience” (Nakamura & Csikszentmihalyi, 2002, pp. 90-91).

Flow theory (or optimal experience) was defined by Csikszentmihalyi (2008) as the act of becoming immersed in an activity; the nine dimensions of the flow experience include a balance of challenge and skill, a merging of action and awareness, clear goals, and feedback, concentration on the task, a sense of control, a loss of self-consciousness, a transformation of time, and an autotelic experience. These conditions are necessary to induce and sustain a pleasurable state of optimal experience or flow. Too much challenge and not enough skill can lead to anxiety, whereas too much skill and not enough challenge can lead to boredom. Flow is experienced in the “sweet spot,” where challenges are appropriate for the level of skill a person possesses.

In addition to the skill/challenge paradigm, the merging of action and awareness plays an essential part in reaching flow during an activity, especially during the use of VR. Presence and immersion are

concepts linked with VR (Mutterlein, 2018) and indicate a merging of action and awareness in which users become entirely absorbed in their activity. The original rock climbers Csikszentmihalyi observed when theorizing flow had clear goals and feedback in their activities. They were able to complete increasingly tricky climbing routes, much like video game players are able to complete increasingly difficult game levels. While VR may not have a single goal to reach due to the number of activities it is used for, users can create their own goals when using VR.

Many of the other dimensions of flow depend on the skill/challenge paradigm, the merging of action and awareness, and clear goals and feedback being met (Csikszentmihalyi, 2008). Users entering a flow state often focus their entire concentration on the activity, gain total control over their actions, lose their self-consciousness, and lose track of the time when they are immersed in the activity.

Therefore, this study investigates whether a first-time user of a VR headset experiences flow and examines whether novelty appears to have an effect on reaching a flow state.

The VR Experience

Recent studies have found that VR technology may be more effective at connecting media footage to viewers than when they view the same footage through two-dimensional (2D) technology (De Gauquier et al., 2019; Van Kerrebroeck et al., 2017). Consumers are often able to simulate “real life” experiences through VR (Diemer et al., 2015), and VR experience has been associated in the literature with the concepts of immersion and presence (Mutterlein, 2018), as well as vividness (Van Kerrebroeck et al., 2017). Each of these is discussed in turn, with their connection to novelty.

Immersion and Presence

Immersion is a feeling of being “in another place,” while in reality, that person is situated somewhere else (Witmer & Singer, 1998). Slater (2018) described the situation like this: although a person inherently realizes a simulation is an illusion, they react to what a VR system portrays. The term immersion is often related to the concept of telepresence, which is the idea that one is not actually there, but feels as though, through a medium, they are in a remote environment (Klein, 2003; Steuer, 1992). However, more recently, telepresence has been merged into the idea of presence (i.e., you feel that you are “there” when you are in fact not “there”) (Samur, 2016). Further, while some research defines presence as a more elevated sensory experience when compared with immersion (Samur, 2016), Mutterlein (2018) suggests that presence influences the feeling of immersion in a VR experience; immersion is further broken into the

categories of fluency (the participant finds concentrating easy to accomplish) and absorption (the participant does not notice time passing).

While immersion and presence can sometimes be used interchangeably in VR literature (Samur, 2016), immersion is often influenced or moderated by the effect of presence (Mutterlein, 2018). That is, while people may know a VR simulation is an illusion, the effect of presence on immersion may allow them to react to what the system shows them. In this study, presence is defined as a sense of “being there,” while immersion entails a feeling of being “involved in and absorbed by the activities conducted in that place” (Mutterlein, 2018, p. 1411).

Consequently, both the experience of immersion and presence have definitions that are being defined in relation to VR systems while simultaneously demonstrating how they each influence experience and perception. In fact, presence has been used in travel research and has been shown to be related to a positive attitude toward destinations, establishing its influence in visual persuasion (Tussyadiah et al., 2018). Novelty, in this case, when more clearly defined, may help researchers understand the part it plays in this equation. Therefore, this study examines whether those who use a VR headset for the first time describe the experience in a manner that relates to the literature’s descriptions of immersion and presence and how novelty may influence those experiences.

Vividness

Vividness has been studied as it relates to VR immersion, and early on, Steuer (1992) described it as a concept that entails how the environment gives information to our senses. Vividness is therefore dependent on a particular medium’s technical characteristics, and two decades ago, 3D online experiences were credited with having an advantage in direct and indirect consumer learning (Li et al., 2001). As 3D experiences continued to evolve, research suggested that these experiences could allow consumers an opportunity to interact with a product; that is, using 3D models that provided vivid colors and consumer control of the image was shown to have a positive effect on behavioral intention (Dennis, 2010).

Moving beyond 3D to VR experience, research supports that VR technology gives users higher perceptions of vividness and presence compared with 2D video; this, in turn, can affect users’ attitudes toward certain advertisements (Van Kerrebroeck et al., 2017). Further, VR can make the experience of imagery more powerful for a user (Overmars & Poels, 2015). Interestingly, research has suggested that vividness has more influence than interactivity in affecting telepresence (Cheng et al., 2014).

Consequently, how does the “newness” of VR affect those perceptions of vividness? What happens when individuals must orient themselves to the technology? Does that orientation detract from vividness, or does it possibly enhance it? These questions are still unanswered. Therefore, this study also examines statements from first-time VR users with a focus on their experience of vividness.

Virtual Reality: Examining Novelty

Novelty, or something new or different from anything familiar (Merriam-Webster, n.d.), has been applied to VR experiences in a limited capacity, mostly in education research. Adams et al. (2009) explored the use of VR in the classroom with boys diagnosed with attention-deficit/hyperactivity disorder (ADHD). They found that the boys with ADHD struggled more with the novelty aspect of VR than students without ADHD. Merchant et al. (2014) found that the more students played educational VR games, the more their learning outcomes started to diminish over time, even if they had at first increased when VR was new to the students. While these studies offer a preliminary look at the use of VR for education, they do little to examine novelty concerning other VR use. Additionally, both studies used children as their sample, limiting their generalizability. Novelty, as a concept, needs additional research and conceptualization, especially as it relates to experiencing the concepts of flow, immersion, presence, and vividness. Therefore, this study focuses on these two primary research questions:

RQ1: Does novelty influence the experience of flow, immersion, presence, and vividness?

RQ2: What aspects of a novel experience are unique to that first experience?

Methods

This exploratory study takes a phenomenological approach, which uses in-depth descriptions of participants’ experiences of a real-life phenomenon to understand those experiences better and lay the foundation for future studies (Cresswell & Poth, 2018). The multifaceted philosophy of phenomenology is difficult to simplify, yet contemporary versions emphasize the need to get beneath or behind subjective experience “to reveal the genuine, objective nature of things” (Schwandt, 2015, p. 235). The first step of a phenomenological approach includes determining whether the research problem is best examined by using a phenomenological approach; subsequent steps include identifying the phenomenon of interest, specifying the broad philosophical assumptions of the study, collecting data from individuals who have experienced the phenomenon through the use of interviews, generating themes from

significant statements, developing the textual descriptions of these themes, and providing a complete description and written form of the essence of the experiences (Creswell & Poth, 2018).

The researchers addressed the first step by determining that experiencing VR for the first time is a unique and one-time experience for each human individual. Therefore, this study examines novelty through the experiential statements and actions and in-depth interviews with those who wore a VR headset for their very first time. By doing so, novelty's relationship to other concepts related to VR in the literature—such as flow, immersion, presence, and vividness—were deeply explored and generated themes from participant statements that were developed, compared, and refined until the “essence” of the phenomenon was clarified. This process was undertaken in order that future studies can better operationalize a concept that is often referenced but less often defined apart from other concepts.

Because a phenomenological study is conducted through the subjective judgment of the researchers, the background of the researchers can be described as follows. The first researcher is a middle-aged woman who did not use VR through a headset until two years before this study when she joined her university students in experiencing it for the first time. Since that time, she pursued research in VR, especially as it relates to purchase intention and persuasion, using a faculty research grant to purchase an Oculus Quest 2 to use for projects such as this one. The second researcher is a young woman who has used VR occasionally to view 360 images and play games such as Beat Saber (Beat Games, 2019).

Sample

IRB approval was sought and granted before researchers recruited research participants. The researchers utilized a sample of 27 participants who experienced VR for the first time and then answered open-ended questions concerning that experience, in addition to two demographic questions. Participants were recruited at a mid-size, Midwestern university campus; however, the only parameters for participation included an age range (18 to 65 years of age) and the personal guarantee that the participant had never before used a VR headset. The phenomenon of first-time use was expressed as a necessary component to the research. Those who had been on a virtual ride at a theme park were not disqualified.

Participants were offered no incentive beyond a free 20 to 30 minutes of VR video watching and gameplay. The response from the campus community was positive and resulted in more than enough volunteers to meet the needs of the study. The participants who took part in the study ranged in age from 19 to 64, with a mean of 37.6.

In-Depth Interview Question Design Sample

Questions included those that reflect Mutterlein's (2018) study connecting VR immersion and flow theory, although the format was open-ended to gain a more in-depth understanding of novelty. Prompts for participants following the 30-minute VR experience included the following based on the concepts from the literature review.

- What did you expect to feel the first time you experienced VR? How is that different from what you felt?
- How did it feel to be inside the VR headset?
- Did you find it difficult or easy to concentrate on the VR experience? Why or why not?
- How aware of time did you feel? Did more or less time pass than you supposed? Why do you think that is?
- How would you rate your ability to focus on anything else when you are in a VR headset?
- Did you think about your immediate surroundings (outside the VR headset)? Why or why not?

Data Collection and Analysis

Participants were given 20 to 30 minutes of virtual reality time. Each one had to learn how to adjust the headset for maximum effect and then know where the "Oculus" button was located (it is flat and sometimes challenging to find when inside the headset) in order to "quit" VR applications. Participants were instructed that they would select from a variety of VR games and YouTube 360 videos in their first-ever encounter with using a VR headset. Each VR session was conducted in an empty classroom with one or both researchers present. Participants stood in an open space cleared of any encumbrances and set with a virtual boundary that could be seen by the VR user. Each wore the headset and used both hand controllers. The researcher overseeing the experience used a cell phone app or laptop to view what the participant was viewing. Participants were guided to watch a YouTube 360-degree of a hot air balloon ride first (Journey360, 2018), then a 360-degree travel video of their choice, and were finally asked to select a game, which included a choice between the demo versions of Beat Saber (Beat Games, 2019) and Space Pirate Trainer (I-Illusions, 2017). One of the two researchers wrote detailed observations of each participant's first-time use of and reaction to VR. These notes were reviewed and compared with the in-depth interviews that were conducted at the

end of each participant's experience. Sessions were not video recorded to lessen the self-consciousness of participants and obtain more natural reactions to the experience, as participants can be less willing to be recorded due to privacy and confidentiality concerns (Asan & Montague, 2014).

After viewing of the footage, the researcher removed the VR headset and had the participant take a seat in another chair in the room, where the open-ended question prompts were given. The researcher typed responses into a laptop to ensure the greatest possible accuracy of recording the answers. The same questions were asked of each participant; however, the open-ended format allowed the researcher to clarify a question or follow it up for more detail, which is important for phenomenological research (Cresswell & Poth, 2018). Participant notes were uploaded to a central drive and independently reviewed by both researchers. Lincoln and Guba (1985) suggest that the counterparts to objectivity and reliability are confirmability and dependability. Therefore, the researchers used confirmability by corroborating and comparing each other's notes and findings and ensuring dependability by controlling the environment as much as possible (all participants completed their first VR experience in a classroom for a very specific amount of time).

After data collection was complete, the researchers began the process of generating themes from the analysis of significant statements; this part of the process included multiple steps (Creswell & Poth, 2018). First, both researchers reviewed 10 participants' field notes and interview statements. These were highlighted for 80 significant statements made by participants. Significant statements are defined as those statements made by participants that related to the concepts of immersion, presence, vividness, or flow in either prior expectations of the lived experience of using VR for the first time or that dictated the lived (real life) experience of using VR for the first time.

Both researchers then worked through the significant statements and determined general categories for each statement that applied to the overarching concepts of flow, immersion, presence, and vividness. Through notetaking and discussion, these categories were further refined into three general emerging themes. Following this process, the field notes and interview statements from the following 17 participants were used to further discuss and refine the coding of 82 additional significant statements into the categories and general themes. The results and description of this process are explained below.

Results

The data revealed 162 significant statements from the 27 individuals who participated in the study. The statements from the participants during (field notes) and after (in-depth interview) were clustered, with the concept behind each question guiding the researchers to better place each answer into a category based on the literature. Each of the 27 participants expressed similar responses to many of the questions, with the exception of a participant who had used gaming technology extensively. Examples of significant statements and their clustering into categories are shown in Table 1. Both researchers independently reviewed and then together integrated the categories revealed in the interviews and field notes to confirm the three emergent themes.

Coding Categories

The 162 significant statements were clustered into the following categories.

- Pre-VR expectation. This category contained statements that reflected participant expectations of trying new technology for the first time. Several participants said they expected motion sickness or “choppy graphics,” enhancing their surprise when the environment was more immersive than expected. Others were expecting immersion but were unable to explain exactly what that might feel like. Finally, a small portion of participants indicated that they were uncertain of what to expect, an admission of not knowing what might come.
- Pre-VR anticipatory emotions. This category focused on statements that expressed an emotion prior to experiencing VR for the first time. While the idea of nervousness was expressed in statements about using a previously unfamiliar item of technology, most participants named their primary emotion as excitement, with an expectation of a fun activity that is both foreign and valuable.
- Post-VR experience. This category included statements that showed the violation of expectation in undergoing the real-life experience of the phenomenon of using VR for the first time. The feeling of “being there” (presence) and realism linked with immersion were better than expected for all the participants except the participant who indicated a great deal of experience with gaming.
- VR immersion. Because immersion pertains to feeling that you are in a place in addition to being involved with the activities in that place (Mutterlein, 2018), participants’ statements representing this category included those that mentioned forgetfulness that they were wearing a headset and an undisturbed focus on the task at hand.
- VR presence and vividness. This category included significant

statements that focused on the participants' expressions of either the ease of concentration while in the VR headset for the first time and/or their loss of a sense of time. The control of the senses experienced through vividness and presence have been found to be influential to the overall experience of immersion (Mutterlein, 2018); therefore, statements concerning concentration and loss of time show the influence of presence and vividness in the sensation of being somewhere else (Overmars & Poels, 2015).

- Lack of but potential for VR flow. Finally, participant comments that reflected a sense of losing oneself in the process related to the category of flow. These statements were different from those above in that they showed that participants were able to release their hold on reality (no worries about bills or other appointments), although several mentioned that they still worried about running into things at times, and that they "came out" of the experience when they did.

Emergent Themes

Using the emergent coding process, three distinct themes associated with the concept of novelty emerged from the 162 significant statements, coded into the six categories. These themes include 1) disorientation and immersion, 2) surprise, and 3) a gradual release on reality. Each is discussed in detail below.

Disorientation and Immersion

Immersion occurs when people feel they are in a different place than their current location, and the concept of immersion highlights that although someone may be cognizant of being where he or she actually is, they will react to simulations an immersive VR system portrays (Slater, 2018; Witmer & Singer, 1998). The idea of immersion was experienced during first time VR use, but not always, or commonly, in an immediate way.

While participants in the study eventually became immersed in the gaming portion of their experience, they also reported feelings of initial disorientation to the new technology. One participant expressed a feeling of being dizzy on the onset, yet soon felt comfortable enough to move around, expressing that concentration became more focused on the world inside the headset as time progressed. Participants had not previously used VR, so some struggled with the controls and functions of the headset and virtual menus. One participant who struggled with the headset said, "This is disorienting at times."

Ultimately, these feelings of disorientation due to novelty can delay experiences of flow and immersion. The statements that created the category of pre-VR expectation were juxtaposed with observations and post-experience statements in the categories of post-VR

experience and VR immersion. The discrepancies between these pre and post statements, as well as the field observations, demonstrated that a period of time ensued in which the feelings of unfamiliarity and uncertainty had to “give way” to the feeling of being “put in the situation,” as one participant described the experience of watching the 360 video. Using the hand-controllers for one participant seemed especially challenging, and she was distracted by these during her initial video.

To further demonstrate the time-lapse between disorientation and immersion, many of the participants reported feeling more disoriented during the 360 videos than during the games, which generally pulled their attention away from their surroundings and into the game they were playing. While participants encountering novelty can experience disorientation as they become more immersed in their activity and this activity is disrupted (e.g., by switching from 360 video to VR games), this can lead to flow when immersion is balanced with a challenge. The participants were only offered 20 to 30 minutes of VR time in this experiment; therefore, in order to properly observe a flow state during VR use, longer periods of time should be used, but these findings indicate flow is attainable during novel activities.

Surprise

Novelty and surprise have been delineated in recent research, with surprise defined as “an emotion arising from a mismatch between an expectation and what is actually observed or experienced” (Barto et al., 2013, p. 2); thus, they are not the same, but surprisingly often accompanies novelty. Overall, surprise, defined as a mismatch of expectation and anticipatory emotion with the real-life experience of VR, emerged as a predominant feeling expressed by participants.

Participants most often responded with these phrases: 1) “This is so cool,” 2) “This is crazy,” 3) “Wow,” 4) “Whoa,” 5) “This is pretty neat,” 6) “Oh my gosh,” and 7) “This is incredible.” In addition, statements from the category of VR presence and vividness (Dennis, 2010; Samur, 2016), two concepts that are part of overall immersion (Mutterlein, 2018), illustrated how the feelings of being in another place and interacting with colorful and vibrant video and games defied the experience that participants expected and anticipated.

Participants reported being surprised at how immersive the virtual world was, how clear the graphics were, and how much time had passed when the session was over. These feelings of surprise disrupted their notion of what VR would be like, and these feelings also aligned with the novelty of the technology for the participants. Being first-time users of VR, participants appeared to have more capacity for surprise compared, perhaps, to someone who is very

familiar with VR technology. One participant reported a high familiarity with gaming systems, despite never using VR to game. This participant reported less surprise than other participants who were not gamers, leading to the same conclusion. Therefore, it appeared that the more novel an activity, the more surprise a respondent reported. As the surprise dissipated and participants became more familiar with the activity, they became more immersed.

Gradual Release on Reality

The first two themes encapsulate the very beginning of the experience of using a VR headset for the first time to enjoy 360 videos and VR games, focusing on disorientation and surprise, as well as the transition into immersion, which was expressed by one participant as a feeling that “my perception of the environment felt so real.” Initially, participants had to orient themselves to the technology before an experience of immersion ensued. However, as participants continued to experience VR, and because the study gave them a period of time to grow comfortable, the final theme that emerged from the categories was that of a gradual release on reality.

Regarding the potential to experience flow, participants reported feeling their reality slip into the background while using the VR headset. They mentioned forgetting about bills, personal lives, and even the room they were standing in while in the virtual world. The majority felt that less time had passed than had transpired. Losing a sense of reality is the main element to entering the flow state (Csikszentmihalyi, 1965). A gradual release of reality is expected when activities are novel due to the skill/challenge paradigm of flow. Some participants even reported feelings of anxiety when they began to explore the virtual world, most likely because they did not have enough knowledge and skill for the challenge presented. Yet, the lack of flow for VR may also demonstrate the need for a more extended and longer experience with VR to reach a flow state. Some participants reported very little release on reality, especially when viewing 360 videos. Several were too worried about running into something or falling and were unable to completely leave reality behind despite there being visual indicators in the VR world that alerted them that they were moving outside the designated boundary (some participants did express some relief at knowing they had this visual boundary to protect them). This, again, is due to the novelty of the technology and the lack of skill to fully become immersed in the virtual world.

Discussion

The emerging themes from this study present both theoretical and practical implications. All three are relevant to the research questions: 1) Does novelty influence the experience of flow,

immersion, presence, and vividness? and 2) What aspects of a novel experience are unique to that first experience? In an effort to better define novelty in relation to other concepts that have had more focus in VR research, this study presents several important points.

First of all, in discussing the theme of disorientation and immersion, novelty may postpone the sense of immersion and presence that is so fundamental to the experience of VR (Mutterlein, 2018; Slater 2018). Novelty appears to include a delay in “settling in” to the experience, and it could be a variable that has a negative moderating effect on these other key concepts. In addition, the key concept of vividness in VR research (Dennis, 2010) has a direct connection to the theme of surprise. The low expectations of vividness among new users were disrupted by this emergent theme. Further, as the theme of a gradual release on reality demonstrated, it may be possible that novelty could enhance these same key concepts—immersion, presence, and vividness—once the phases of disorientation and surprise are bypassed. In fact, the association among these variables can now be explored by using these themes to definitively operationalize novelty.

In discussing the relationship to flow theory (Csikszentmihalyi, 2008), the participants did not achieve a flow state as expressed through their statements. However, if they were given more time with the headset, they could possibly reach that state. Considering this, novelty may have a negative influence on flow, due to the initial anxiety associated with the theme of disorientation and immersion.

Interestingly, novelty appeared to influence the expectations of 360-degree video and virtual game experiences, but not in the same manner. The 360-degree videos were experienced with a certain degree of vividness and presence, as indicated in the significant statements, whereas immersion seemed more apparent once participants entered a game and began to interact. Interactivity can be defined as having the ability to participate in and even control a communication tool (Liu, 2003). Although this study did not examine it directly, this research appeared to point to the possibility that interactivity might distract from novelty.

In addition, in the course of this study, as the concept of novelty became more clearly defined through the emergent themes, the possibility emerged for its testing and inclusion in a new iteration of the technology acceptance model, which focuses on perceived ease of use and perceived usefulness as influencing the acceptance and use of new technology (Davis, 1989). The possible influence of novelty on ease of use—both in relation to disorientation and immersion and surprise (which disrupts expectations of what VR will be like), presents a possibility for addition to the model.

Finally, for this study's practical implications, one must consider how novelty will affect users in several situations. When a VR user is new to the technology, disorientation and immersion may influence how they experience a program or game. Although novelty can increase a user's sense of excitement through the element of surprise, the disorientation may distract the user from the programming and delay his or her immersion in it. In addition, professionals using VR experiences for persuasion (such as at a conference where a new product is being marketed) may need to consider that new users will have a different experience from those who are familiar with the technology. New users may be less likely to become immediately immersed, and therefore, persuaded.

Limitation and Areas of Future Research

This study was an exploratory examination of novelty in relation to VR use. As a small, but in-depth, phenomenological study, the purpose of the research was to help establish a better understanding of novelty, especially in relation to VR experiences.

Future research should further explore the relationship among the variables mentioned here—novelty, flow, immersion, presence, and vividness—through quantitative methods. Although it may become more difficult to recruit participants who have never used VR technology, correlations might be measured by including items that ask how often a participant has used VR. In addition, testing differences between high VR users and newer VR users may show how novelty further influences entertainment experiences and persuasive messages. Those using VR to deliver messages may consider how novelty will delay message or game absorption, and an understanding of the elements of flow can aid in understanding novelty and use of new technologies. Message deliverers should be aware of how much challenge there is to the system in which they are displaying their messages and also be aware of the primary demographics of users who already use the platforms.

This study's limitations include an inability to generalize results to a larger population. It included a small number of participants for the purpose of collecting more in-depth analysis, and all of the participants were university students, staff, or faculty. In addition, although the researchers had a rationale for not video recording the participant sessions, the in-depth interviews could have included an audio recording to further substantiate and provide further review opportunities for the researchers. Finally, the programming shown to each individual, although similar, was slightly different based on their personal choices. However, the similarity in most of the responses establishes a case that VR novelty may present similar experiences for both genders of a wide range of ages. Future studies may also

examine how those of different genders and ages experience VR novelty.

Conclusion

As VR technology grows more affordable and ubiquitous in society, the opportunity to study the experience of novelty grows less achievable (Boas, 2013; GVR, 2019). Nevertheless, leaving the concept of novelty untapped presents us with a gap in knowledge when other concepts such as immersion, presence, vividness, and flow have been examined in more detail. This exploratory, phenomenological study provides a foundation for future studies on the concept of novelty not only in relation to VR, but also in relation to examining technologies that have only just begun to be imagined. Because VR can impact the way we interact with media, in addition to having persuasive qualities, the manner in which we experience it is a critical area of focus.

Technology for personal and professional use continues to improve and bring us innovative experiences that many of us could never have imagined. Because there will always be new technology, the concept of novelty will also always exist. When we consider how people adopt new technology, such as the ideas put forth in the technology acceptance model (Davis, 1989), the concept of novelty will need to be included in future studies to ensure that its effect is not overlooked when it comes to the way we use media, and more importantly, how it affects us.

Table 1. Coding categories

Coding Categories	Example Significant Statements
1) Pre- VR Expectation	Motion sickness/choppy graphics An immersive environment. Really expect, next level of gaming experience Don't have many expectations. Don't know much about it. Envision as IMAX theatre experience.
2) Pre-VR Anticipatory Emotions	I felt uncertain about trying something so unknown I'm excited. Not nervous or scared—don't know what to expect, the only slight concern with motion sickness. I'm so excited. I've been thinking about this since I heard about your study.
3) Post-VR Experience	Had to remind myself it wasn't real; I didn't expect it to be as realistic. Totally amazing experience. More interaction than I thought. Nothing like I expected. Trippy. I'll be saving a lot on airfare to visit places.
4) VR Immersion	I felt like I was out of reality—in a bubble—in my own bubble. I forgot I was wearing a headset because I was so involved. You lose track of the fact you have something on your head.
5a) VR Presence & Vividness	It was easy to concentrate on it. No limits. I could look all around – freedom, no limits. It was so easy to concentrate. The reality that you're in it—it's hard to think about other things. It felt easy to concentrate. Fairly all encompassing.
5b) VR Presence & Vividness	Wow! That went by like that. I can't believe it was 25 minutes. More time passed than I expected felt like five minutes, not 25. Felt like ten minutes instead of 25—goes by quickly
6a) Evidence of Potential VR Flow	I really feel like I just went somewhere. When I was in it, that was everything. I wasn't worried about anything else in life. Not bills, not anything.
6b) Lack of VR Flow	I did, still a little worried about running into things. No—I was pretty focused on what I was seeing and hearing.

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