Using Virtual Reality to Stimulate Creativity.
A Case Study on Communication Specialists

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SUMMARY

The subject of the paper is to understand the way in which Virtual Reality (VR) contributes in the enhancement of creativity within the creative process. In the context of Romanian technological development, the present thesis integrates two main objectives. On the one hand, it aims to determine whether the exposure to an immersive stimulus (VR) can generate a higher level of creativity compared to a non-immersive one for emerging communication specialists. On the other hand, the thesis investigates the way VR can be used by experienced communication specialists as a tool for increasing the level of creativity within the creation process.

The relevance of the research is twofold. First, at the scientific level, it is one of the early attempts to assess the role of immersive environments in enhancing creativity for communication emerging and experienced specialists. Furthermore, as the literature usually attests that men are more prone in using technology, the present study comparatively investigates the gender differences in respect to VR exposure and its creativity role. Equally important is the chosen Romanian case study, a nation that is interested on adopting virtual technology but has barely recently started. In this respect, the analysis focuses on the way VR technology is perceived in general and in relation to its creativity stimulation potential. Second, at the managerial level, the results of this paper can be used by both communication specialists and policy makers. Communication specialists can better understand how VR technology can be efficiently used in their creative process. Policy makers can grasp the role of this technology in educating and in stimulating creative ideas and behaviors in emerging adults.

To comprehend the way VR influences the level of creativity within the creative process, an experimental design is used. Thus, the research questions developed for the experiment are the following:

RQ1. Are there differences between groups exposed to different levels of immersivity (none, 2D, and VR) in terms of personal creativity self-assessment, creativity self-evaluation of given tasks, and specialists' evaluation of that tasks?

RQ2. Are there gender differences between the three levels of immersivity (none, 2D and VR) in terms of the way creativity is being assessed (creativity self-assessment, creativity self-evaluation of given tasks, and specialists' evaluation of the tasks)?

RQ3. Are there significant correlations between the initial creative personality and the way the subjects from all the three involved groups (non-exposed, exposed to 2D stimulus, and exposed to VR stimulus) self-assess their creativity, the way they evaluate the creative level of their tasks, and the way specialists evaluate the creative level of their tasks?

RQ4. Considering the group exposed to the VR immersive environment, is the level of creativity higher after the exposure to the stimulus in comparison with a previous moment (for both creativity self-assessment and self and specialists' evaluations of the tasks)?

RQ5. What is the perception of the subjects exposed to the immersive environment (VR) on the attitude towards this technology, the perceived ease of use, the perceived usefulness, the emotional attachment, and the behavioral intention?

RQ5.1 Is there a correlation between the level of creativity of the subjects exposed to an immersive environment and the way they perceive VR technology?

By using an experimental design, it is determined to what degree a VR experience may increase the level of creativity in the process of creating content in communication and advertising domains.

To understand how VR is perceived among communication and advertising specialists and to determine the role of VR in the creative process in communication and advertising domains, an in-depth interview is used to answer the following research questions:

RQ6. How is creativity defined by communication and advertising specialists and which are the stimuli used in their creative process?

RQ7: What is the communication specialists' opinion on VR and on its use as an incentive within the creative process?

The extent to which a VR experience can increase the level of creativity in the content creation process for advertising is evaluated using an experimental methodology to test the following hypotheses:

H1. The exposure to an immersive VR environment, in comparison with a non-immersive one (no stimulus and 2D exposure) determines a more positive creativity self-assessment in different moments of time during the experiment.

H2. The exposure to an immersive VR environment, in comparison with a non-immersive one (no stimulus and 2D exposure) determines a more positive self-evaluation of the creativity level in the given tasks.

H3. The exposure to an immersive VR environment, in comparison with a non-immersive one (no stimulus and 2D exposure) determines a more positive specialists' evaluation of the creativity level in the given tasks.

H4. There are no differences between men and women in terms of creativity evaluation.

H5. The initial level of creative personality is positively correlated with the self-assessed creativity in different moment of time during the experiment, with the creativity self-evaluation of a given task, and with the specialists' creativity evaluation of that task.

H6. There is an increased level of creativity for both creativity self-assessment and the self and specialists' evaluation of the tasks after the exposure to the VR immersive environment.

H7. The attitude towards VR is explained by the perceived ease of use of VR (H7a), the perceived usefulness of VR (H7b), and the emotional attachment (H7c) towards using VR.

H8. The intentional behavior to use VR is determined by the attitude towards using VR (H8a), perceived ease of use of VR (H8b), by the perceived usefulness of VR (H8c) and by the emotional attachment to it (H8d).

H9. There is a strong correlation between the initial technology perception, the level of creativity of the subjects exposed to an immersive environment, and the way they perceive VR technology.

An online survey-based experiment and an in-lab experiment with a controlled environment compose the basis for the 1x3 experimental design. A number of N=104 respondents represents the sample of the experiment. The Control group consists of a total number of 33 participants, of which 75.8% are females and 24.2% are males. There are 32 participants in the Experimental group 1 (2D condition), of whom 71.9% are females and 28.1% are males. The thesis integrates 39 participants in the Experimental group 2 (VR condition), out of which 74.4% are

females and 25.6% are males. All the respondents are emerging communication and advertising specialists. At the time of the study, they are either bachelor`s (n=69) or master`s (n=35) students.

To comprehend how VR is perceived by experts in the communication and advertising fields and to identify how VR impacts the creative process in these fields, an in-depth interview represents the second research method of the thesis. The convenience sample of specialists (N=21) is composed of 14 women and 7 men, ages 23 to 46. The respondents primarily work in marketing, IT, the automobile industry, HR, new-media events, advertising, and consulting companies in the departments of creation, marketing, communication, pay-per-click and BTL. Among the positions they hold are those of marketing manager, marketing specialist, content writer, CEO, social media strategist, PR manager, creation specialist, BTL manager, creative director, and video editor. The department's seniority ranges from 1 to 21 years. The interview is divided into four main parts. The first incorporates inquiries into the areas of communication and advertising as well as queries about creativity in general. The second series of questions is about the creative stimuli that experts can utilize to enhance the creative process and produce creative ideas. Assessing the use of VR (including its advantages and disadvantages) is the goal of the third section. The final one addresses questions on using VR technology as an incentive for creativity.

The experiment's findings show that there are differences between groups exposed to various levels of immersivity in terms of individual self-assessment, creativity self-evaluation of given tasks, and specialists' evaluation of the tasks. For example, participants in Experimental group 2 believe they are more creative than subjects in Control group and Experimental group 1 subjects, demonstrating that VR determines a more positive creativity self-assessment in the three moments of time during the experiment. Additionally, the Experimental group 2 participants initially perceive VR as a beneficial technology, but after using it, they assert that they are more creative than they were prior to experimenting with the helmet, expressing a favorable attitude towards VR. The results also show that the subjects' level of creativity is higher following stimulus exposure compared to the preceding moment, for both creativity self-assessment and self and specialists' evaluation of the tasks, as the subjects exposed to the stimulus indicate that they feel more creative and they self-evaluate their tasks as being more creative than the preceding one. Additionally, the tasks that are completed after being exposed to the stimulus receive higher evaluation scores from the specialists than those completed prior to exposure to the stimulus.

The results of the in-depth interview show that, regardless of their positions at their workplaces, the respondents' definitions of creativity or the creative person vary depending on their personal opinions and prior experiences in the workplace. Moreover, every interviewee admits using specific stimuli in their creative process. The results emphasize that, regardless of the respondents' positions, some of them consider VR a useful tool for improving their level of creativity, while others believe technology has no impact on the creative process.

The research contributes to completing some gaps in the literature, particularly regarding the integration of VR technology with the communication and advertising fields. Additionally, it performs a comparative analysis by gender and fills in the gaps in existing research papers on the use of VR in enhancing creativity. The viewpoints on VR technology of both newly qualified experts and experienced specialists are included in the study.

Keywords: Virtual Reality (VR); Creativity; Technology Acceptance Model (TAM); Communication specialists; Experiment; In-depth interview.

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