

# Transcendent experience in the use of computer-based media

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## ABSTRACT

If interactive computer media is engaging and immersive, it may trigger similar feelings that people experience when they, for example, are wandering in nature, participating in high-risk sports or listening music. These experiences have been often characterized by words like 'transcendence', 'peak experience' and 'spiritual experience'. We conducted an experimental study in which the participants rated their feelings of transcendence after browsing and navigating through a hypertext or watching a film. The results showed that different types of media stimuli elicited different degrees of transcendence. It also seemed to be that the more immersive the stimulus was the higher the sense of transcendence the participants experienced. Both individual characteristics of users (i.e., the ability to focus on enjoyable activities) and properties of media stimuli (i.e., sensory engagement, sensory fidelity and interactivity) seemed to contribute to rated transcendence.

## Author Keywords

Transcendence, interactive media, peak experience, flow, presence.

## ACM Classification Keywords

H.5.1. Multimedia Information Systems:  
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## INTRODUCTION

There is a lot of evidence that the use of information technology can produce experiences in which people feel themselves deeply engaged and involved in a particular activity [3,4]. These experiences have much common with a range of positive human experiences that have been, for example, called as transcendence and peak experience.

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Transcendent experience can be defined as a subjective mental state that is characterized by such qualities as strong positive affect, feelings of overcoming the limits of everyday life, sense of harmony with the whole world, feelings of lightness and freedom, and sense of timelessness [10]. According to Abraham Maslow [8], transcendent experiences are some kind of a climax of self-actualization.

Previous evidence suggest that transcendent experiences are quite common in Western countries. For example, Thomas and Cooper [9] found that a little over a third of respondents in their survey reported that they have had intense spiritual experiences. Hay [5] conducted three surveys in England during the 1970s and found that 36-65% of his respondents had had these kind of experiences. Similar results have been found in other studies.

People may experience feelings of transcendence during many kinds of pleasurable activities. For example, intense moments of love, aesthetic enjoyment, bursts of creativity and fusion with nature may trigger transcendent experiences. Natural environments have been a common trigger for these kind of feelings [10]. Many people experience transcendence while participating in high-risk sports, such as mountain climbing and skydiving [1]. Involvement with music has also often been mentioned as a trigger for transcendence [7].

Scientific interest in transcendent experiences is motivated by the belief that they are beneficial. For example, it is thought that they may have restorative effects, increasing, for example, learning efficiency and behavioral control and eliciting personal growth.

## Properties of transcendent experience

What are the key qualities of transcendent experiences? According to Csikszentmihalyi [3], people experience transcendence when their attention is tightly focused on a pleasurable activity. As a result, some kind of ego loss occurs so that the distinction between self and object is lost, and the person becomes suddenly clearly aware of self in terms of its fusion with world. However, transcendence is not a synonym to flow [10]. In fact, it is probable that there are different forms of transcendent experiences, and only

the active form is close to flow experience. Experiences related to deep flow are characterized as highly absorbing, important and transcendent, and there is a strong sense of compatibility and familiarity [10]. The passive form, in turn, is characterized by awe and diminutive feelings, i.e., feelings of smallness and insignificance. Hood [6] has proposed that the awareness of one's limits makes possible and facilitates transcendent experience or positive mystical experience. According to him, "anything that suddenly illuminates or makes one aware of a supposedly limiting situation simultaneously may trigger feelings of transcendence" (p. 162)

### **Transcendent experience in the use of computers**

An interesting question is whether people have transcendent experiences when using computers. It might be thought that content is more important than form in this case, that is, it is not the computer itself that is important but what it presents to us. We may have feelings of transcendence when we read a book or watch a beautiful wallpaper. In a similar way, we may experience transcendence when we read an e-book or watch a beautiful screen saver.

What is more interesting is whether there is something special in these experiences when we use computers and whether there are special 'computer-based' activities that elicit feelings of transcendence. Especially, could people have transcendent experiences when using interactive computer-based media, such as interactive hypertext and computer games? The use of interactive hypermedia may elicit feelings of transcendence, because these kind of media is able to be immersive and engaging. The immersiveness of interactive games may, in turn, be due to the fact that they are based on both familiar narrative structure and interactions that are predictable and scripted in detail [3].

Immersion has been thought to be related to our being completely absorbed within the happenings of a familiar narrative schema [3]. Engagement, in turn, is associated with our ability to recognize central schemas from a bird's eye perspective and in our ability to retrieve several relevant schemas from memory.

The fact that navigation reveals a story that is based on our own meaningful choices is felt as pleasurable. It is also possible that feelings of transcendence are heightened through the media's interactivity. Douglas and Hardagon [3] have proposed that engagement may be a central and an essential aspect of our experience with interactivity. Hence, it is also possible that transcendence is a key element of interactivity.

Even though there are several studies on flow experiences in human-computer interaction (e.g., [4]), to our knowledge, the effect of transcendence has not been previously investigated. When exploring a new field, both qualitative and quantitative approaches could be used. A qualitative approach means that people are asked to recall

incidences of transcendence that occurred when they, for example, used interactive computer media. If a quantitative approach is used, people have to rate their feelings of transcendence after the use of different types of media stimuli. In the present study, a quantitative approach was developed.

A questionnaire was adapted from that developed by Williams and Harvey [10] for the assessment of transcendence experienced in the use of computer-based media stimuli. One aim of the study was to test the questionnaire and to see whether it is able to reveal differences in transcendence. This study should be considered as a preliminary test of this measure. Our starting point is that, since different types of media (e.g., traditional film and television media or interactive hypermedia) call on both immersion and engagement, they can also elicit transcendent experiences. A non-interactive film stimulus would elicit passive feelings of transcendence, i.e., diminutive experiences which are characterized by high fascination, high novelty and low compatibility. An interactive hypermedia stimulus, in turn, would elicit more active forms of transcendence that are characterized by feelings of compatibility and familiarity. Another aim of the study was to examine whether high- and low-immersive stimuli would elicit different levels of transcendence. It is reasonable to suppose that the more immersive the stimulus is the higher the sense of transcendence will be.

## **METHOD**

### **Participants**

Forty volunteers participated in the experiment (28 females, 12 males). The mean age of the participants was 28 with a range between 20 and 56. They were ignorant of the purpose of the study before participating. Participants were selected in the order of their announcement to an email message. They were paid for their participation (each one received two movie tickets, total value about 13€).

### **Stimuli**

In the hypertext condition, a Finnish version of 'House of Learning' hypertext was used. House of Learning is a typical hypertext stimulus that simulates a walk through the 'Mozart's Museum'. Two types of navigation were used: The participant either directly clicked on an icon, or he/she dropped down a menu item. Text/graphic ratio was also varied: In one condition, the visual field was large and the text field was small; in the other condition, the visual field was small, and the text field was large.

In the hypertext condition, stimuli were generated on the face of 21" degree CRT screen with a PC computer. The number of color was set to 256, and the screen resolution was 1024 x 768. Sounds were presented through high-quality headphones. A standard computer mouse was used for input.

In the film condition, the participant watched a film about a walk through the 'House of Learning'. The film was projected onto a screen by a standard beamer. Either a large or small projected screen was used. The big projected field of view was 60 degrees of visual angle. The small field of view was 36 degrees. The distance between the participant and the screen was 1.50 m in both conditions. Front projection was used. Spatial sound and background music were either enabled or disabled. The possible audio stimuli were presented through headphones.

### Measures

A questionnaire was used that measured characteristics of transcendence experienced in the use of computer-based media stimuli. It is based on a questionnaire developed by Williams and Harvey [10] for measuring transcendent experience in forest environments. Transcendent experiences are described by three components, Fascination, Novelty and Compatibility. Fascination is, for example, associated with feelings of being overwhelmed and fascinated by the stimulus, belief that the experience was caused by the stimulus and awareness of different types of feelings in body and mind. In general, the concept indicates intense emotional involvement. Novelty, in turn, is related to the novelty of the experience, and Compatibility is associated with a sense of ease and power over the stimulus. Passive forms of transcendence are characterized by low scores on Compatibility. Compatibility scores should, on the other hand, be higher for more active forms of transcendence [10].

The MEC Spatial Presence Questionnaire (MEC-SPQ) consists of several scales that measure the different concepts integrated in Wirth et al.'s [11] theoretical presence model. Only the subscales related to spatial presence experiences, i.e., Self-Location and Possible Actions, were analyzed.

Witmer and Singer's [12] Immersion Tendency Questionnaire (ITQ) is aimed to examine individual differences in the ability to experience presence. It concentrates on the user characteristics. For example, it aims to measure the capability or tendency to be involved or immersed, and the ability to focus on a particular activity. It consists of three subscales, Focus, Involvement and Games. The Focus items are related to mental alertness, participants' ability to concentrate on enjoyable activities and their ability to block out distractors. Involvement items, in turn, are related to the participants' tendency to get involved passively in some activity; and the Games items are asking how frequently participants play video games and whether they get involved to the extent that they feel they are inside the game.

### Procedure

A 2 x 2 x 2 between-subjects experimental design was used. Half of the participants participated in the hypertext condition, the other half of them participated in the film-stimulus condition. In the hypertext experiment, one factor

was Navigation (direct-click vs. drop-down), and the other factor Text/graphic ratio (big visual field, small text field vs. small visual field, big text field). In the film-stimulus condition, the first experimental factor was Projection screen size (large vs. small projected screen size), and the other factor was Spatial sound (spatial sound enabled vs. disabled).

The total duration of an experimental session was 10 minutes. After the stimulus presentation, the participants were asked to fill out the three questionnaires.

### RESULTS

Since the number of participants was small per condition, tests of significance were not conducted. Instead of them, the data were analyzed by calculating effect sizes (Cohen's  $d$ ). We first compared the film and hypertext stimulus conditions. It was found that the Fascination scores were higher for the hypertext stimulus ( $M = 3.1$ ) than for the film stimulus ( $M = 2.7$ ), and the effect size was moderate ( $d = 0.48$ ,  $r = 0.23$ ). Similarly, the Compatibility scores were higher for the hypertext stimulus ( $M = 2.2$ ) than for the film stimulus ( $M = 1.8$ ), and the effect size was moderate ( $d = 0.60$ ,  $r = 0.29$ ). The Novelty scores, however, were almost identical for the two types of stimuli ( $M = 1.8$  for the hypertext stimulus,  $M = 1.7$  for the film stimulus).

Both for the film and hypertext stimuli, we compared the most immersive and the least immersive stimulus conditions (for the film stimulus, large screen and spatial sound enabled vs. small screen and spatial sound disabled; for the hypertext stimulus, direct click and big visual field vs. drop-down and small visual field). In the film stimulus condition, the mean scores of all the three subscales were higher for the more immersive stimulus than for the less immersive stimulus. The effect size was large for the Novelty ( $d = 1.60$ ,  $r = 0.63$ ), and Compatibility scores ( $d = 1.20$ ,  $r = 0.53$ ); for the Fascination scores it was small ( $d = 0.23$ ,  $r = 0.12$ ). In the hypertext condition, the mean scores of the Fascination and Compatibility scales were higher for the more immersive stimulus than for the less immersive stimulus, the reverse was true for the Novelty scores. The effect size was moderate for the Fascination scores ( $d = 0.46$ ,  $r = 0.22$ ), and small for the Novelty ( $d = -0.34$ ,  $r = -0.17$ ) and Compatibility scores ( $d = 0.25$ ,  $r = 0.12$ ).

The association between the immersive tendency or presence scores and transcendence ratings were analyzed using the General Linear Model Multiple Analysis of Variance in SPSS (Statistical Package for the Social Sciences). Continuous independent variables were used as covariates while Stimulus Condition was used as a between-subjects variable. Focus was positively associated with Fascination [ $F(1,39) = 8.0$ ,  $p < 0.01$ ]. The interaction between Focus and Condition approached significance [ $F(1,39) = 3.1$ ,  $0.05 < p < 0.1$ ]. Spatial presence was also significantly positively associated with Fascination [ $F(1,39) = 14.4$ ,  $p < 0.01$ ].

## CONCLUSIONS

The finding that some of the differences in transcendence ratings between stimulus conditions were moderate or large gives some support for the sensitivity of the questionnaire. Especially, in the film condition, there was a large difference in Novelty and Compatibility scores between the most immersive and the least immersive stimulus; and for the Fascination scores, the difference was quite large in the hypertext condition. However, since the rest of the differences were small, the questionnaire perhaps should be better adapted to reflect the characteristics of computer-based media.

The film stimulus should elicit more passive feelings of transcendence, and the hypertext stimulus should trigger more active forms of it. Passive forms of transcendence are, in turn, characterized by low compatibility, active forms by high compatibility [10]. Since the Compatibility scores were much lower in the film condition, the study provides some support for the validity and sensitivity of the Compatibility scale.

The results suggest that there are personality-related differences in transcendence ratings: Those participants who had high scores on Focus scales were more fascinated than those who had lower scores. Interestingly, spatial presence was also positively associated with Fascination. It is intelligible that people who are able to tightly focus their attention on pleasurable activities have high scores both on presence and transcendence.

The immersiveness of the stimuli was manipulated by varying the number of sensory outputs, image size and quality of interactivity. The results suggest that immersiveness of the stimulus may be associated with transcendence: The more immersive the stimulus is, the higher the sense of transcendence people experience. Sensory engagement, sensory fidelity and interactivity should, thus, be important determinants of transcendence.

It may be argued that it is not meaningful to talk about transcendent experiences in case of computers. The finding that there are large differences in scores between conditions does not prove that people have feelings of transcendence when they use computers. If people are asked to answer to crazy questions about transcendent experiences, they try to make sense of them and give answers that sound reasonable. But transcendence does not necessarily exist as a mental state before people are asked about it.

There is, however, considerable evidence that, when using computers, people can experience intense feelings of absorption and engagement that resemble those feelings we are studying here. In fact, transcendence may be one of the key determinants of the experience people derive from computer-based activities.

Even though we claim that the feelings of our participants were similar in nature to those people experience, for example, in natural environments, a greater clarity is

needed regarding the forms of transcendent experiences that occur in human-computer interaction. Next, we will explore different types of transcendent experiences by a survey. The aim is to obtain more information of the nature of the experiences itself, the meaning that is given to these experiences in human-computer interaction and the causes and effects of these experiences.

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