CyberPsychology & Behavior
Volume 12, Number 2, 2009

DOI: 10.1089/cpb.2008.0156

The Green Valley: The Use of Mobile Narratives for Reducing Stress in Commuters

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Abstract

New technologies have influenced communication and interaction among people, enabling them to overcome face-to-face limitations and eliminating the need for persons in a communicative relationship to be in the same place at the same time. This project aimed to test the effectiveness of mobile phone usage applied to emotion induction. The authors wanted to check whether or not mobile narratives supported by multimedia mobile phones can enhance relaxation and reduce anxiety in a sample of commuters. The project sample consisted of 120 commuters, college students aged 20 to 25 years. The sample was randomly assigned into four conditions: the Vidnar group experienced the mobile narrative on a mobile phone during their daily train trip; the Nonar group experienced only video content proposed on a mobile phone; the MP3 group experienced only the audio content proposed on an MP3 player; and the Control group provided a no-intervention condition. The study measured participants' emotional state (State-Trait Anxiety Inventory [STAI] State questionnaire), trait (STAI Trait questionnaire, Generalized Self-Efficacy Scale), and sense of presence (Slater-Usoh-Steed Questionnaire [UCL-SUS] and the Internation Test Commission–Sense of Presence Inventory [ITC-SOPI]) before and after the experience. The main results showed a significant decrease in anxiety level ($p < 0.05$, assessed by STAI State questionnaire) and an increase in relaxation level ($p < 0.001$) assessed by the Visual Analog Scale (VAS). No significant differences were found in other conditions.

Introduction

New technologies have influenced communication and interaction among people, enabling them to overcome face-to-face limitations and eliminating the need for people in a communicative relationship to be in the same place at the same time. New communications technology has modified relational styles among people.

The Centre of Study and Research in Communication Psychology of the Catholic University of Milan carried out a project named Technology for Well-Being Improvement, which aimed to analyze the potentiality of communication tools to improve the quality of life.

This project checked the effectiveness of multimedia mobile phones applied to emotion induction. The authors wanted to test the ability of mobile narratives (narrated video) supported by multimedia mobile phones to enhance positive emotions, specifically relaxation, and to reduce anxiety in a commuters' sample.

This project was based on appraisal emotion theory.[1] According to Scherer, emotions rise after an individual evaluation of the situation: each event assumes a peculiar meaning that influences the individual's emotional state. Appraisal theory[1–3] postulates that each different emotion is the result of a sequence of stimuli and evaluation of stimuli that involve emotional and subjective answers. The stimulus evaluation results, in the appraisal model, modify emotional state in an individual in relation to the adaptation process. This change modifies the emotional pattern in two ways: at first regulating subjective feedback and than regulating an emotional answer.

Scherer[1] and Gross[4] confirm that event evaluation triggers in individuals different behaviors and emotional and physiological subjective answers. These answers could be modulated, thereby giving a new final form to the emotional manifestation. This process is called the process model of emotion regulation.[5]

Gross[5] identified five phases of emotion generation that submit to an emotion-regulation process. According to Gross, it is possible to regulate the emotional experience in different moments: before a particular event starts or during the event exposition.

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The first phase, situation selection, refers to the option an individual has to avoid certain people or situations on the basis of their possible emotional impact.[5] The emotional situation modification (second phase) is still possible when the individual is already embedded in an emotion-eliciting situation. This phase refers to the subjective possibility of modifying the local environment to transform the emotional impact. Another important phase, attentional deployment, is the individual's option to direct attention toward a particular section of an event in order to influence his or her emotions using attentional strategies. When a situation is selected and potentially modified, an individual could change his or her personal emotional state. Cognitive change refers to the individual's option to modify emotional significance in two ways: changing what a person thinks about a given situation and analyzing personal capacity to manage the difficulties it creates. Finally, response modulation allows a person to influence emotion response based on behavioral and physiological answers.

Gross and Levenson[4] tested the effectiveness of clip video in the emotion induction process. During their work, the authors validated 10 film clips. The aim of their research was to demonstrate that by using short clip videos (from 30 sec to 2.30 min), presented on a personal computer, it is possible to modify an individual's emotional state, eliciting a specific, discrete emotional state (e.g., happiness, sadness, fear, disgust) rather than a diffuse state of positive or negative activation.[7]

Expanding on Gross's research, Fredrickson studied positive emotion effects.[8] She verified that the use of strategies to develop positive emotions promotes prevention of anxiety and stress treatment usually associated with the presence of negative emotions. Fredrickson's foremost hypothesis is that positive emotions enhance human action capability during a particular elicitation event and allow an individual to keep those new abilities for the long term.

Fredrickson[8] investigated the main ways to induce emotions, with a particular focus on positive emotions. She emphasizes that occasional experiences of positive emotions created increased personal skills in the research participants and that these skills could be used by each participant for a long time and in different contexts. This practice is called the broaden-and-build model of positive emotions.[8] Induction of positive emotions may be associated with a significant increase of attention and an enhancement of intellectual and psychological skills. The process of inducing positive emotions may help people to overcome stressful situations: this model provides effective resources to cope with the effects of negative emotions.[9]

To better understand the emotion induction process, it is important to understand that each emotion is linked to a particular situation that activates the individual and modifies his or her reaction.[10] Therefore, it is significant to use a specific narrative to increase the interaction and the emotional elicitation in a person inside a virtual context.[11]

In our study, the participants' emotional answers were analyzed with reference to a few video clips presented on a mobile phone, with a specific mobile narrative created to induce a relaxation sensation in a sample of commuters. Narrative allows the participant to improve the interaction with the surrounding environment.[11] It is important for a good narrative to have a high coherence level in order to create a high credibility level.

Verbal persuasion as a narrative property was analyzed by Bandura[12] as a fundamental variable in the self-efficacy field. Perceived self-efficacy is defined as people's judgments of their capabilities to categorize and perform courses of action required to achieve chosen types of performances.[12] In his work on efficacy expectation, Bandura gives great relevance to four sources of information: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. In particular, he analyzed how verbal persuasion could be important in influencing human behavior and teaching people to cope successfully in stressful situations[12] and how emotional arousal is a fundamental source of information that can affect perceived self-efficacy in coping with threatening circumstances.

The structural affect theory[13] analyzes how it is possible to use narrative to modify an individual's emotional state. According to Brewer and Lichtenstein,[13] readers' emotions are influenced by the relationship among the plot, the reader's information about the characters, and the information in the storyboard that is shared among characters.

From this point of view, a new discipline was created to help explain how it is possible to use narrative for emotion induction. Narrative, as a vehicle of a feeling of engagement in a virtual environment, was studied by Freeman,[14] who created *emotioneering* techniques: 32 narrative techniques that can create in the participant a deep sense of presence in a game or in other interactive experiences. For the emotion induction process through new media, using narrative, there are four fundamental phases:[11] (a) create characters with whom people can self-identify; (b) get someone to do something special; (c) control the order of different activities; and (d) control the means by which the activities of the different characters are presented to the reader.

The sense of presence is another fundamental concept used to analyze how to create a deep sense of engagement between an individual and the virtual environment. Barfield et al.[15] defined presence as the "participant's sense of being there" in the virtual environment. The concept of presence is used to analyze the engagement level of the participant in a specific task: the higher the sense of presence perceived during an activity, the higher the participant's engagement during this activity.[11]

Slater and Wilbur[16] analyzed the sense of presence as a fundamental characteristic of a virtual environment: a virtual context can induce in the user a high sense of presence only if the images proposed are a faithful presentation of a real situation. This perspective was not confirmed by Sastry and Boyd,[16] who found that sense of presence is related to the possibility for a user to interact with the environment proposed. To induce a sense of presence, it is important to provide the user an opportunity to move objects presented in the context. The better a medium is able to support each participant's action, the higher the sense of presence and the perception of lack of mediation: it is important for technology to be "invisible" to the user[11] so that he or she can concentrate on the task rather than on the media used.

Sense of presence and narrative are interrelated concepts: one of the instruments to increase sense of presence in participants is a good narrative.[11] Mobile narratives, narrated video experienced on mobile phones, were used in this study to perform relaxation exercises aimed at introducing emotional changes in participants to improve their well-being in everyday life stress situations.[18] The narratives guided the

TABLE 1. STAI STATE QUESTIONNAIRE: DESCRIPTIVE STATISTICS

	Condition									
	1		2		3		4		Total	
Time	M	SD	M	SD	M	SD	M	SD	M	SD
T1	37.10	6.47	36.77	9.07	36.13	7.04	36.63	8.36	36.66	7.71
T2	33.37	4.91	36.93	8.60	36.13	6.78	35.20	7.73	35.41	7.17
T3	32.20	6.18	38.37	10.36	36.13	7.04	36.20	10.35	35.72	8.87
T4	30.63	4.61	37.87	8.97	37.93	7.30	37.70	13.20	36.03	9.49

participants during the exploration of four different areas of a mountain lake, proposing different relaxation techniques based on both the progressive muscular relaxation protocol[19] and the authogenic training protocol.[20]

Mobile narrative was used in the protocol of this study, the aim of which was to check if a narrative experience, associated with video content, can influence participants' emotional state. This research is the second part of a pilot study[21] analyzing the efficacy of mobile narratives implemented on mobile phones to induce a relaxation state. The authors decided to replicate this study adding an MP3 condition, an audio-only content condition, for better understanding the efficacy and the importance of mobile narrative compared with the video-only content.

Specifically, the study investigated whether mobile narratives that guide participants in a mediated experience, related with video content presented on mobile phone, could induce emotional changes in participants, significantly decreasing anxiety, increasing a feeling of relaxation, and providing bases for increasing individual self-efficacy levels. Researchers also wanted to understand if mobile narrative induces a higher sense of presence during video presentation. Therefore, anxiety level, relaxation level, and sense of presence were measured in a condition without narrative content. The authors developed the following hypothesizes:

H1: A narrative created ad hoc, based on relaxation exercises and associated with video content, could be more effective in positive emotion induction than a video-only condition.

H2: A specific narrative could help the participant to contextualize the mediated experience and enhance the participant's sense of presence.

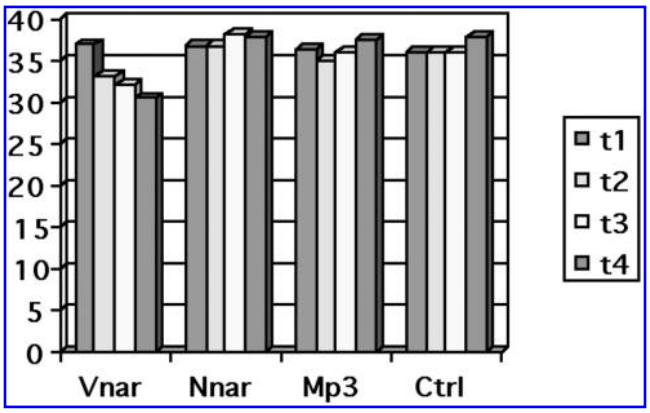

FIG. 1. STAI State Questionnaire: compared means.

H3: A mobile narrative experience, associated with video content, could enhance individual self-efficacy capability.

Materials and Methods

Experimental design

This study used a mixed design (4 × 2). The first independent variable was the experimental intervention, measured between participants on four levels: video and audio content (Vidnar); video-only content (Nonar); audio-only content (MP3); and control group (Ctrl). The second independent variable was time as a unit of measure: pre- and postintervention.

In this study, all four conditions were compared. The Vidnar condition presented video content of a virtual island associated with audio/relaxation content. The Nonar condition presented video content of a virtual island. The MP3 condition presented audio relaxation content. The Ctrl condition was a no-intervention group.

The dependent variables were emotional state dimension, emotional trait dimension, and sense of presence.

Sample

The sample consisted of 120 participants, 60 female and 60 male, all university commuter students, aged 20 to 25 ($M = 23, 27, \pm 1.38$), and were recruited on the Varese-Milano local train (70-min trip). The commuters were divided into two groups based on different timings: in the morning, from Varese to Milano, participants had to take the train between 7 and 7:30 a.m.; in the afternoon, from Milano to Varese, they had to take the train between 5:30 and 6 p.m. Those who took part in the experiment went to Milan only to attend a university lesson, not for an exam. This criteria was decide by the researchers to guarantee a proportional stress level in the commuters.

The sample was randomly divided into the four conditions, and each group (Vidnar, Nonar, MP3, and Ctrl) had 30 participants. No differences among groups were found before the intervention.

TABLE 2. STAI STATE QUESTIONNAIRE: CONTRAST ANALYSIS

	Contrast analysis		
Level	MS	F	Sig.
1 vs. 4	458.431	14.261	0.000
2 vs. 4	162.697	5.793	0.001
3 vs. 4	78.142	3.238	0.025

MS, mean square.

TABLE 3. VAS QUESTIONNAIRE ITEM "ANXIETY": DESCRIPTIVE STATISTICS

	Condition									
	1		2		3		4		Total	
Time	M	SD	M	SD	M	SD	M	SD	M	SD
T1	2.60	1.04	2.13	1.28	3.00	1.46	2.27	1.17	2.58	1.31
T2	2.03	1.07	2.10	1.21	2.57	1.17	2.40	1.19	2.23	1.16
T3	1.50	0.82	1.83	1.02	2.20	1.10	2.27	1.17	1.84	1.02
T4	1.37	0.76	1.90	1.18	2.30	1.26	2.40	1.19	1.86	1.15

Protocol

The aim of this experimental protocol was to increase a relaxation sensation in a sample of commuters during their daily train trip. The procedure was organized in four sessions performed during 2 consecutive days, each session lasting 10 minutes.

To support the training, we developed both audio and video contents: the audio content consisted of a narrative voice that guided the participants in the visualization process, in physical reaction recognition, and in the self-efficacy abilities of a relaxing environment. The video content presented four different relaxation environments designed to help participants relax themselves with a discovery journey in each environment.

In the Vidnar and Nonar conditions, video content presented four different parts of a virtual lake, two daytime scenes and two nighttime scenes. The sounds of waves in the background was associated with those experiences. In the Vidnar condition, the video content was associated with the audio content: a narrative guided the participant during the lake exploration and the fulfillment of the relaxation exercises. In the MP3 condition, the participant experienced only the audio content. Consecutive video scenes, in both the Vidnar and Nonar conditions, were presented along with audio content. Audio content was the same as in MP3 condition. The Ctrl group had only to complete the questionnaire battery without receiving any intervention.

Material

Materials included four Motorola A925 mobile phones with 208 × 320 displays, running on Universal Mobile Telecommunications System (UMTS) technology, and used with headphones. Four videos representing a virtual island were associated with a specific narrative and a musical background that reproduced sea waves. Six MP3 players supported the audio condition and also were used with headphones.

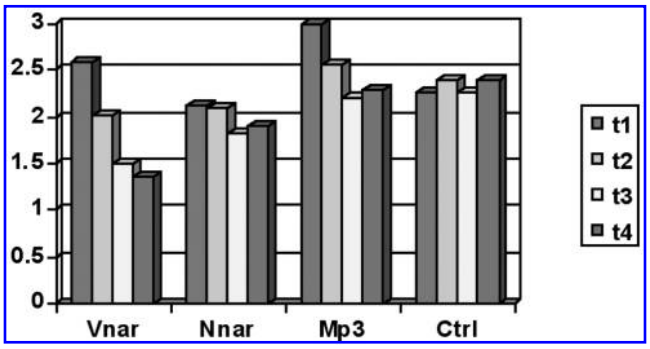

FIG. 2. Vas Questionnaire item "anxiety": compared means.

Measures

Questionnaires used in this study were submitted on paper and included the following.

State questionnaires. The State-Trait Anxiety Inventory (STAI)[22] measures state anxiety level with 20 items. The Positive Affect Negative Affect Scale (PANAS)[7] consists of 20 adjectives, and participants must decide, on a 5-point Likert scale, how a particular adjective describes them; the Visual Analog Scale (VAS)[4] contains eight adjectives that describe the participant's emotions.

Presence questionnaires. The UCL-SUS,[23] containing three items, analyzes the participant's sense of presence perceived in relation to the mediated experience. The Internation Test Commission–Sense of Presence Inventory (ITC-SOPI)[24] contains 44 items, divided into four scales: spatial presence, engagement, ecological validity, and negative effects. It measures sense of presence in a mediated environment.

Trait questionnaires. The 10-item Generalized Self-Efficacy Scale[25] measures the participant's self-efficacy level. The trait version of the STAI (Form Y)[22]contains 20 items.

Procedure

The Vidnar, Nonar, and MP3 conditions followed the same procedure. The difference among the three groups was in the kind of intervention to which they were submitted: in the Vidnar group, participants were invited to watch mobile narratives on a mobile phone; in the Nonar group, participants were invited to watch only the video clip on a mobile

TABLE 4. VAS QUESTIONNAIRE ITEM "ANXIETY" : CONTRAST ANALYSIS

Level	MS	F	Sig.
1 vs. 4	31.008	31.973	0.000
2 vs. 4	9.633	11.481	0.001
3 vs. 4	0.208	0.176	0.676

MS, mean square.

TABLE 5. VAS QUESTIONNAIRE ITEM "RELAX": DESCRIPTIVE STATISTICS

	Condition									
	1		2		3		4		Total	
Time	M	SD	M	SD	M	SD	M	SD	M	SD
T1	3.80	1.03	4.13	1.25	3.67	1.09	3.60	1.38	3.87	1.13
T2	4.73	1.14	3.87	1.17	3.90	1.21	3.47	1.25	4.17	1.23
T3	4.97	1.16	3.63	1.45	3.70	1.47	3.60	1.38	4.10	1.48
T4	5.17	1.32	3.70	1.09	3.60	1.52	3.47	1.25	4.16	1.49

phone; in the MP3 group, participants were invited to listen to only the audio contents through MP3 devices.

On the first day of the experiment, during their morning train trip, participants had to complete baseline questionnaires: the state and trait questionnaires[22] (first evaluation: t1). At the end of the submission, they had to experience the mediated experience during the train trip. During the evening train trip, participants had to watch the second mediated experience and then submit a new questionnaire battery: state and presence questionnaires (second evaluation: t2).

During the second (final) day of the experiment on the train, participants had to complete the state questionnaires battery and then experience the third mediated experience (third evaluation: t3). During the evening train trip, they had to watch the fourth and last mediated experience and then complete the state, trait, and presence questionnaires (fourth evaluation: t4).

The procedure for the MP3 condition was the same as for the Vidnar and Nonar conditions, but only the UCL-SUS[23] and ITC-SOPI[24] questionnaires, not the presence questionnaires, were included. During the morning train trip on the first day of the experiment and during the evening train trip on the second (final) day of the experiment, participants of the Ctrl group had to complete the state and trait questionnaires. They had not been administered any intervention and had taken the same train for the duration of the experiment, the train they usually took to go to university.

Results

Date were first analyzed for normality and distribution control, kurtosis and skewness control, and the absence of significant differences among groups before the intervention. Analyses were made on the four survey times:

T1: answers to the questionnaires obtained in the baseline of the first day, before the mediated experience.
T2: answers to the questionnaires obtained in the evening of the first experimental day.
T3: answers to the questionnaires obtained in the baseline of the second day, before the mediated experience.
T4: answers to the questionnaires obtained in the evening of the second experimental day.

The researchers performed a repeated measures ANOVA to analyze time influence among the beginning (t1) and the end (t4) of the intervention for each condition and to determine if there were significant differences in time × condition. Within-groups analyses were done through repeated measures ANOVA for "time" factor (2 × 4: pre- and postintervention × conditions).

The "state" dependent variables showed a significant variance in time. Repeated measures ANOVA results, in the STAI State questionnaire,[22] showed a significant difference in time, $F(3, 114) = 4.646$, $p < 0.05$, between t1 and t4, and in time × condition, $F(3, 348) = 6.194$, $p < 0.005$, referring to anxiety level. Means are compared in Table 1 and Figure 1. Contrast analysis showed a significant difference in the interaction time × condition, assessed by the STAI State questionnaire[22] (Table 2). Means results demonstrate that the Vidnar condition showed a significant anxiety level decrease in time, assessed by the STAI State questionnaire.[22] This anxiety decrease was not significant in the Nonar, MP3, and Ctrl conditions. In these conditions, the mean shows an anxiety level increase in the time (from t1 to t4).

Looking at these results, it is possible to argue that the audio and video contents, presented on a mobile phone, are effective in reducing anxiety levels in a sample of commuters. A significant anxiety decrease in the Vidnar condition is confirmed also by VAS questionnaire[4] analyses.

For the "anxiety" item in the Vidnar condition, an anxiety level decrease among times is confirmed. Repeated measures

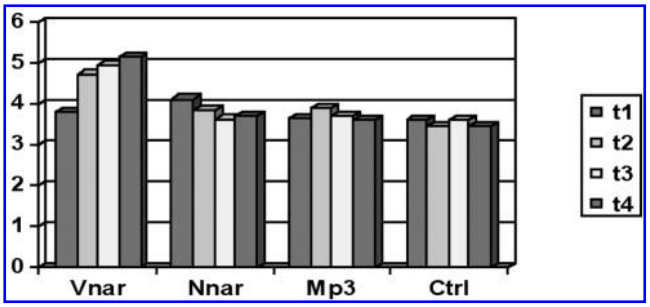

FIG. 3. Vas Questionnaire item "relax": compared means.

TABLE 6. VAS QUESTIONNAIRE ITEM "RELAX" : CONTRAST ANALYSIS

Level	MS	F	Sig.
1 vs. 4	19.433	10.079	0.000
2 vs. 4	3.053	4.930	0.003
3 vs. 4	0.719	0.714	0.545

MS, mean square.

Table 7. Sus Questionnaire: Descriptive Statistics

	Condition					
	1		2		Total	
Time	M	SD	M	SD	M	SD
T2	3.97	1.30	2.47	1.11	3.40	1.34
T4	4.33	1.12	2.43	1.45	3.57	1.33

ANOVA results show a significant decrease of anxiety level between t1 and t4, $F(3, 348) = 12.904$; $p < 0.001$. Means are compared in Table 3 and in Figure 2.

Contrast analysis, as illustrated in Table 4, shows the efficacy of the intervention as a great decrease in anxiety level, specifically between the first and the third times.

In addition, results showed a significant anxiety level decrease in the Nonar and MP3 conditions, but with lower values compared to the Vidnar condition. Relaxing variables, assessed by the VAS questionnaire's[4] "relax" item, showed a significant difference in time × conditions, $F(9, 348) = 6.949$, $p < 0.001$. Means are shown in Table 5 and in Figure 3.

In the Vidnar condition, there is a significant relaxation level increase from the beginning to the end of the intervention. In the other conditions, there is not a significant change. These results are confirmed by the contrast analysis of time × conditions interaction (Table 6).

Presence questionnaire analysis

The presence questionnaires, the UCL-SUS[23] and the ITC-SOPI,[24] were administered in the Vidnar and Nonar conditions. The SUS results showed a significant difference in sense of presence between t2, answers gotten during the baseline presence questionnaires, and t4, answers at the end of the intervention, $F(1.58) = 6.938$, $p < 0.05$. Means are compared in Table 7. In the Vidnar condition, the results showed a significantly higher value for sense of presence from the beginning to the end of the intervention, as shown in contrast analysis in Table 8.

Trait questionnaire.

The STAI Trait[22] questionnaire results showed significant differences in the anxiety level in the interaction between time and conditions, $F(3, 116) = 5.072$, $p < 0.05$. At the end of the treatment (t4), the Vidnar condition showed a significant anxiety level decrease compared to other conditions. These results are not confirmed in the other conditions. In particular, in the Nonar and MP3 conditions, results showed a little anxiety level increase.

The Self-Efficacy Questionnaire[25] showed significant differences in self-efficacy states among the conditions, $F(3, 116) = 10.404$, $p < 0.01$. At the end of the treatment, the Vidnar condition showed a significant increase of self-efficacy state. The results did not confirm this positive change in the other conditions.

Discussion

The aim of this study was to investigate if a mobile narrative can induce positive emotions in a commuter sample. Specifically, the authors wanted to check whether mobile narrative can induce a deep relaxation sensation and a significant anxiety sensation decrease. The main hypothesis was that a narrative created ad hoc for a video shown to participants could influence the emotional state in users, inducing relaxation sensations and enhancing self-efficacy level.

Data analyses were made comparing differences in answers to the questionnaires among time intervention (pre- and postintervention) and in time × condition (Vidnar, Nonar, MP3, and Ctrl conditions). Data analyses show that the presentation of a few videos of a mountain lake associated with a specific narrative (combined audio and video content) are more effective in regulating emotions and enhancing self-efficacy than either audio or video content alone. In fact, data showed a higher efficacy in the Vidnar condition for reduced anxiety levels and increased relaxation and self-efficacy levels.

Mobile narratives presented in the Vidnar condition were aimed at increasing the relaxation level through techniques based on progressive muscular relaxation[19] and authogenic training.[20] Those exercises were intended to create a deep feeling of engagement in users concerning the proposed environment in order to prove that through a high attention level and emotional activation, it is possible to create a high sense of presence in the virtual context. It can be deduced that a storyboard created ad hoc for the virtual environment shown enables users to create a sense of engagement in the mediated experience. The importance of giving a particular significance to the images proposed and not to the realism of the context is stressed.

Data confirmed a "spatial presence" sensation increase in the Vidnar group, a significant result not confirmed in the Nonar condition.

Significant differences in time intervention assessed by state questionnaires were found, specifically in the STAI State questionnaire[22] and the VAS[4] questionnaire analysis. The STAI State questionnaire results showed a significant anxiety level decrease in the Vidnar condition, not found in the other conditions. Results assessed by the VAS questionnaire for anxiety showed a significant anxiety level decrease for all the experimental conditions (Vidnar, Nonar, and MP3), but the higher result is found in the Vidnar condition. At the end of treatment, in the Ctrl group, results showed an increase in anxiety level. Data also show the efficacy of mobile narrative (Vidnar condition) for positive emotion induction compared to audio-only content (MP3), video-only content (Nonar), and the Ctrl condition. In fact, data showed a higher efficacy in time intervention in the Vidnar condition for the relaxation variable, assessed by the VAS questionnaire item "relax." In the other experimental conditions, results did not show a significant relaxation sensation decrease. These results underline the efficacy of mobile narrative (audio content associated with video content) in emotion induction, in particular in relaxation induction.

Table 8. Sus Questionnaire: Contrast Analysis

Level	MS	F	Sig.
2 vs. 4	1.667	6.938	0.011

MS, mean square.

As previously stated, the aim of audio content was to induce a feeling of relaxation in users and to create a deep sense of presence in the proposed environment. The Sus[23] questionnaire results show in the Vidnar condition a significantly higher value for sense of presence between time interventions, results not found in the Nonar condition. The ITS-SOPI questionnaire's[24] spatial presence variable shows a significant difference in time intervention in the Vidnar condition. In the Nonar condition, there were no significant differences in time intervention.

Trait variables analyses confirm the efficacy of audio and video content for the anxiety level decrease, results not confirmed in the other conditions. In particular, at the end of the intervention, the Nonar condition shows a significant anxiety and stress level increase.

The analyses made to investigate a self-efficacy increase show significant difference in time between conditions. In the Vidnar condition, the results show a significant increase of self-efficacy perceived by subjects.

Conclusion

Analyzing these results, it is possible to confirm the efficacy of mobile narrative, supported on mobile phone, to induce positive emotional states in users, to improve their well-being in everyday life stress situations, and to create a deep sense of presence in the proposed environment. The mobile phone, as tool in this experiment, is the main aspect of this study: a small and easy instrument that people can use whenever and wherever they like. For future investigations, it could be interesting to analyze the mobile phone's capabilities in the treatment of specific anxiety diseases.

These data suggest the emergence of a new technology area—positive technology—aimed at improving the well-being and quality of life for users.

Disclosure Statement

The authors have no conflict of interest.

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