The Effects of Unifying Creative Meditation on Drivers’ Attention

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Abstract

The paper aims at revealing the effects of unifying creative meditation on amateur drivers performances at attention tests, as well as the existence of some significant differences between genders regarding the receptivity to stimuli such as unifying creative meditation. Thus, the following hypotheses underlie our paper: we assume there is a statistically significant difference regarding attention performances between the subjects beneficiating from a training based on creative meditation and those who do not beneficiate from such a formative program. We assume there are some statistically significant differences regarding the subjects’ receptivity to the training based on unifying creative meditation according to gender.

1. Introduction

In a general sense of the word, meditation is the biophysical mental phenomenon, which describes the attention on a thought, state, consciousness, subconscious or unconscious (Gâtej, 2011).

Many of the meditation techniques have been integrated over time in clinical or specific formative programs and they have been adapted to the purpose of the therapeutic intervention. These techniques have demonstrated significant benefic psychological effects on various components of the human psychic phenomena. (Walsh, Shapiro, 2006 cited in Semple, 2011)

Consequently, the extension of the paradigms regarding the processing of the information within the human psyche has stimulated the interest for a better understanding of the cognitive and affective changes resulting from meditation practices that stimulate the attention (Boals, 1978 cited in Semple, 2011)

Driving is one of the applicability fields of the training based on meditation. Particularly, the creative meditation offers the possibility to enhance some physiological parameters through mental training, as well as the...
awareness and the possibility of adjusting one’s own emotions, which can affect or improve the performance of an activity.

"Driving an automobile is an example of a goal-directed activity with high complexity in which different behavioral elements have to be integrated and brought into a sequential order” (Tanida, Poppel, 2006).

2. Premises

The formation of an amateur driver is a new application field of the creative meditation techniques. However, considering the effects demonstrated by previous studies, on some physiological parameters and some psychic phenomena and processes, it seems to be a manner of increasing the traffic safety. The identifying of the brain structures involved in car driving was studied in a research made by a Japanese team. In 2006, this team revealed significant brain activation was detected during active driving in the primary and secondary visual cortices, primary sensorimotor areas, premotor area, parietal association area, cingulate gyms, the parahippocampal gyrus as well as in thalamus and cerebellum (Jeong, Horikawa, Fukuda, 2006). In 2011, the researchers from University of Massachusetts laboratory, USA, Hölzel, Carmody, Vangel, Congleton, Yerramsetti, Gard, Lazar, reported a series of significant results, meant to enhance the effect of meditation on the human brain, by reducing stress and by activating new creative resources. An experimental sample of 16 subjects was tested by means of the MRI (magnetic resonance imaging) technique before and after the eight-week training, in comparison with a control sample of 17 subjects. Moreover, the study of the gray matter through data obtained morphometrically and expressed in volumetric pixels (voxel). The aprioristic analysis of the data indicates a concentration of the gray matter in the area of the left hippocampus. The overall analysis of the brain indicates a concentration of the gray matter in the area of the posterior cingulated cortex, in the area of the temporo-parietal junction, as well as in the area of the cerebellum, as opposed to the control sample, within which these modifications did not take place. (Holzel, et al., 2011)

The role of attention in adjusting the driver’s behavior implies the understanding of the driving particularities, which can be considered an activity tightly related to attention. Given the fact that driving a vehicle implies the permanent exploring of the route and of the further ambiance, such as periodic visual inspection of the measurement devices indicators on board, it requires the full attention, especially the voluntary and post-voluntary one (Hole, 2007), as well as the focused and distributed one, for the entire period of driving. Another important problem regarding driving is the drivers behavior. In 2011, Openheim and Shinar were defining two models of driver behavior: the functional model and the descriptive model. They also revealed that the optimal approach might be a hybrid that extracts the most useful features of each. (Openheim, I., Shinar, D.,2011)

In a research made in 2006, a group of researchers defined the social concerns as having a major role in driving fear (Taylor, Deane, Podd, 2006).

3. Objectives

This study aims at revealing the effects of the unifying creative meditation on the subjects’ performances at the attention tests, as well as the existence of some significant differences between genders regarding the receptivity to stimuli such as unifying creative meditation.

4. Hypotheses

The hypotheses assumed by this study are the following:

1. There is a statistically significant difference regarding the attention performance between the subjects beneficiating from a training based on creative meditation and those who do not beneficiate from such a formative program.
2. There are some statistically significant differences regarding the subjects’ receptivity to the training based on unifying creative meditation according to gender.

5. Variables

In the case of the first hypothesis, the independent variable consists of the application of the unifying creative meditation techniques and the dependent variable is represented by the level of the attention performances. The second hypothesis brings forward the subjects’ gender as the independent variable and the effect of the unifying creative meditation training as the dependent variable.

6. Subjects

Our research was conducted in a psychology center with credentials in transportation psychology and it aimed at testing 60 subjects, 30 females and 30 males, aged 21 to 32, students of the Faculty of Psychology and Educational Sciences. The sampling in order to constitute this group was pseudo-random. It was a sampling by mutual consent. The subjects were motivated by the possible benefits of the study and by collegiality. They are part of the amateur drivers’ population from Bucharest. In order to test our experimental hypotheses, we divided the subjects in two samples: an experimental one consisting of 15 females and 15 males and a control one also consisting of 15 females and 15 males.

7. Methods and instruments

In order to test the hypotheses of this study we used both pencil-paper and computerized tests. The pencil-paper tests used were the Prague Test and the Distributed Attention Test. The computerized tests are part of the battery RQ PLUS: the VIG test and the TAC test. The Prague test assesses the distributed attention and it consists of the detection of numbers on a special board. The Peteanu Test for Distributed Attention also assesses the distributed attention by identifying boxes numbered successively. It regards the attention focus on the task itself and the resistance to multiple requests of attention. The VIG test is conceived as a dynamic model consisting of 100 sequences randomly presenting a significant visual stimulus and an insignificant visual stimulus. The response manner is preset. The test has a compulsory duration. In the elaboration of the test, the following problematic situations similar to the driving activity were taken into account: the occurrence of visual stimuli similar in significance, shape and graphics, as well as unpredictable stimulus-signal occurrence. The TAC test measures the degree of the attention focus when it comes to the dynamic and random occurrence of signals asking for selection.

8. The psychological model of the test and the procedure:

a. Detection of the occurrence of signals (the concentration is manifested by focusing the eyes on the perceptive field, by enhancing the acuity of the visual analyzer and decreasing the sensitivity of the other analyzers.

b. Fast inspection of the perceptive field (the concentration is manifested by eliminating the competition between relevant and irrelevant stimuli)

c. Selection of the relevant information (the concentration is manifested by the increase of clarity and of the perceptive accuracy)

d. Processing the information (the concentration shortens the deliberation time through the clarity – precision of the identified information)
These tests were applied on both samples, but only the experimental sample beneficiated from the training based on the unifying creative meditation technique. The control sample only participated in discussions related to driving and to the situations faced in this activity. The experimental sample beneficiated from organized groups of discussions on the driving topic and the situations faced, personal analysis to decipher some psychological mechanisms determining a certain behavior and creative-meditative exercises followed by analysis. The meditative exercises consist of muscular relaxation and focusing the attention on an imagistic scenario meant to determine the subject to explore and to experience his own feelings related to this activity. The training based on unifying creative meditation aimed at optimizing the characteristics of the attention by using corporal awareness, cognitive relaxation and awareness and by integrating emotions. This training has been carried out for two weeks and three sessions have been scheduled for each week. Thus, the experimental sample beneficiated from six sessions based on creative meditation within the experiential group.

9. Results interpretation

In order to test the first hypothesis, the results from the attention tests were compared according to the sample to which they belonged (experimental sample, control sample). The T test for independent samples was applied in order to discover the difference between their means related to the results at the attention tests. The collected results were processed through SPSS program and they revealed significant differences between the two samples.

At pre-test we obtained a mean equal to 63.75, at the Prague test. The experimental sample obtained a mean of 64.24. The control sample obtained a mean of 63.26. A mean of 95.36 was obtained at the VIG test. The experimental sample obtained a mean of 93.48. The control sample obtained a mean of 97.24. A mean of 94.13 was obtained at the TAC test. The experimental sample obtained a mean of 94.67. The control sample obtained a mean of 93.59. A mean equal to 66.75 was obtained at the Prague test. The experimental sample obtained a mean of 72.10. The control sample obtained a mean of 61.40. A mean of 100.65 was obtained at the VIG test. The experimental sample obtained a mean of 104.10. The control sample obtained a mean of 97.20. A mean of 98.55. The experimental sample obtained a mean of 101.40. The control sample obtained a mean of 95.70. The results of the t test show that the null hypothesis is rejected and the hypothesis of the research is confirmed (p < 0.05). In other words, there is a significant difference between the two groups. The group, which beneficiated from the training based on the unifying creative meditation method demonstrated a better functioning in the attention field both at the pencil-paper and computerized tests. The test for the homogeneity of variance (Levene) indicates the fact that we are dealing with equal variances, which implies the reading of the results for the t test by following the first line of the table (0.115>0.05). Taking into account these results, we can state that the null hypothesis is infirmed, while the hypothesis of the research is confirmed. In the case of the second hypothesis, the total sample was divided according to gender and the t test for independent samples was applied in order to verify the difference in the results at the attention tests, as far as this variable is concerned. The collected results were processed through SPSS program and they revealed significant differences between the two samples. At the Prague test, men obtained a mean of 60.00 with a standard deviation of 12.53 and a standard error of the mean equal to 1.48, while women obtained a mean of 73.50 with a standard deviation of 12.14 and a standard error of the mean equal to 1.65. At the TAC test, men obtained a mean of 94.90 with a standard deviation of 14.65 and a standard error of the mean equal to 2.63, while women obtained a mean of 102.20 with a standard deviation of 15.71 and a standard error of the mean equal to 2.96. At the VIG test, men obtained a mean of 95.20 with a standard deviation of 10.94 and a standard error of the mean equal to 2.46, while women obtained a mean of 106.10 with a standard deviation of 15.53 and a standard error of the mean equal to 2.91. In the case of the second hypothesis, the results show a significant difference between the two samples, evincing the women’s good receptivity (p<0.05). The test for the homogeneity of variance (Levene) indicates the fact that we are dealing with equal variances, which implies the reading of the results for the t test by following the first line of the second table (0.035>0.05). Therefore, the hypothesis of the research is confirmed and the null hypothesis is infirmed, but
this time moderately, because the driving experience is a variable that could have influenced these data given the fact that the women involved in this research had longer experience than men did.

10. Conclusions

The results of this study are part of the many confirmations in specialized literature, which show that the experiential training techniques using creative meditation have significant effects in enhancing performances in various areas of human activity. Specialized studies suggest that experiences can be seen more clearly after trying meditative experiential techniques because the practices based on concentration can generate a decrease of the usual reactive or inappropriate behaviors. On a dimensional continuum, a regular attention is somewhere between concentration and conscious attention. At the other pole, concentration can be generally characterized by inconstant consciousness, instable emphasis, distraction, emotional reactivity and the attention directed to past or future things. A conscious attention means being able to see clearly and it implies stability, minimum distraction and minimum affective reactivity. Buddhist psychology suggests that personal sufferance can be diminished the more a person concentrates his/her attention with no prejudices toward experiencing present events, by clearly identifying intra-psychic events as such and by avoiding clinging on what is ephemeral (Bhikkhu, 1993 cited in Semple, 2010). The creative meditation has benefic effects on the physiological parameters such as blood pressure and pulse, as well as on attention. The practice of this kind of techniques leads to the increase of performance and to the integration of emotions, implicitly, to the increase of traffic safety.

11. Further directions

The continuation of the study direction includes a formative perspective, namely applying this kind of training programs on more and more drivers, with more and more diverse problematic in driving. The diversification of the samples and the conditions of developing the activity will lead to a finer creation of the methodological arsenal of intervention in the transportation field. The present paper constitutes a part of a vaster methodological intercession, started in 2010, which is still in development. We would like our study to represent a source of suggestions and recommendations regarding the optimization of the traffic and of the driver’s behavior.

References


