

Programmer's mood and their performance

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ABSTRACT

Moods might influence the quality and performance of programmers while programming. It is evident from literature that positive and negative moods influence divergent thinking, quantity/quality of ideas and creative problem solving (Vosburg, 1998). The hypothesis of this study is that the programmers' performance and the quality of their work could be affected by their moods when they develop or test an application. We will briefly discuss our experiment to test this hypothesis. We will also discuss a test carried on to validate movies. These movies then will be used in the experiment to induct moods.

Keywords

Moods, emotions, performance, programmer

INTRODUCTION

The role of emotions in the workplace has received increasing attention from management theorists in recent years (Ashkanasy and Daus, 2002). A relatively new and promising area of research is the effect of moods in the workplace (Pelled and Xin, 1999). Information technology researchers have not considered the role of emotions or moods on IT professionals (Shaw, 2004). Similarly the relationship between affect and behaviour is a central theme of recent psychology (Lewis and Haviland-Jones, 2000) but research on the impact of moods on the software developers seems still lacking. Pelled and Xin (1999) studied the relationship between mood and employee withdrawal behaviour and found positive and negative mood dimension could have an impact on employee's withdrawal behaviour (withdrawal behaviour is a trend of employees to leave the organization). Shaw (2004) studied emotions and their help on job outcomes of IT workers but still the question of moods and their impact on the IT workers particularly and on programmers specifically is yet to be addressed in details. In this research we will study the impact of moods on the programmer's performance. Therefore our experiment hypothesis is that "The moods have an impact on programmers' debugging and coding skills"

In this experiment we will manipulate moods in order to study effects of different moods on coding and debugging skills of the programmer. We will induce different moods of the programmers and then study its

effects on their coding/debugging skills. For judging the effects of moods on the programmer's skills we prepared multiple-choice questions of different programming languages.

METHOD

Participants and Design

Our target participants are programmers. We developed an online application for this experiment. We will send invitations and links of online application to participate in experiment. The experiment takes approx 10 minutes of each participant time. Every participant will watch two movies one neutral mood movie and one mood-changing movie in random order for mood induction. There will be four group of participants each group will watch one out of four mood movies. However will these movies really change the mood? To get the answer we conducted a mood change validation test on ten different movies.

Mood change validation of movie clips

We intend to use different movie clips with sounds to induce moods as this has been tried and tested both in laboratory and field research (Forgas and Moylan, 1987). A total of 16 students (age $M = 27.4$ years; $SD = 4.27$; range from 23 to 39; 4 females; 13 PhD students; 3 Masters Students; 14 with programming experience) participated in the study. The participants watched ten movie clips of 3 to 4 minutes duration.

Materials

The mood assessment scale used in movie validation was the Self-Assessment Manikin (SAM) devised by Lang (1985). It is designed to assess the dimensions valence, arousal and dominance directly by three sets of manikins. SAM depicts valence, arousal dimension with a graphics character arrayed along a continuous nine-point scale. For pleasure SAM ranges from a smiling happy figure to a frowning, unhappy figure; for arousal, SAM ranges from sleepy eyes closed to exciting with the eyes open. It has been tested with the International Affective Picture System (CSEA, 1999) and takes a very short time to complete (5 to 10 seconds). However in this study we only look at two dimensions (valence and arousal), which match the model suggested by Visser, Nancy and Leandre (2000). Valence is taken in terms of happiness and sadness while arousal is taken in term of excitement and

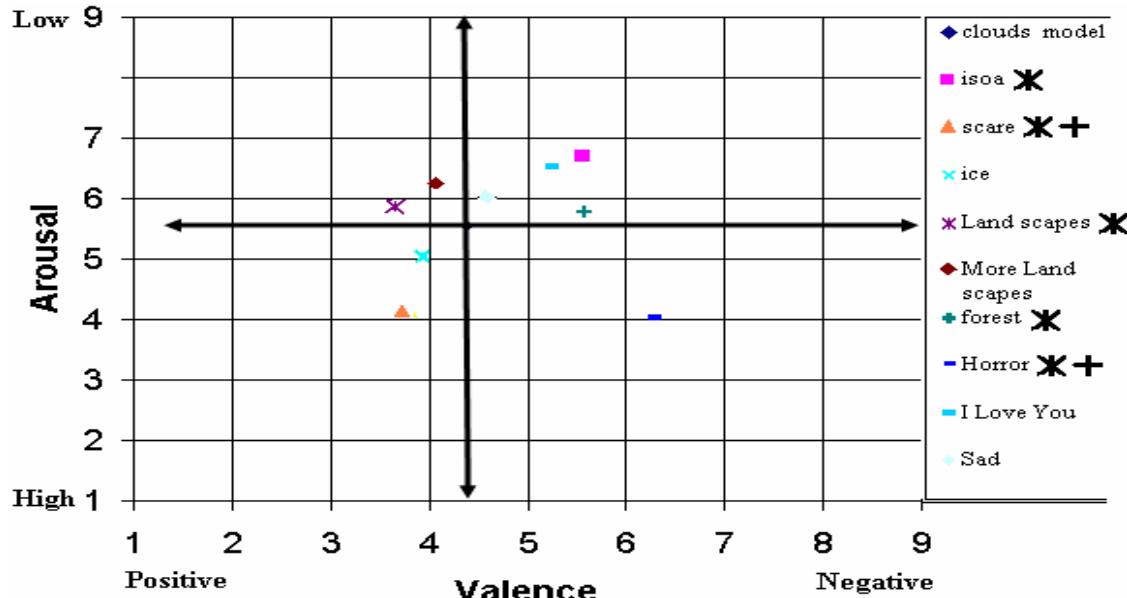


Figure 1. Valence Arousal Model (* Valence $p < 0.05$; + Arousal $p < 0.05$).

calmness. This model helped to map the movies on x-y axis scale with the help of SAM values (figure 1). We tested two movies from each of the four mood category dimensions and two from neutral located in the centre. (For information about movie clips, their names and to download these movies please follow the link below.

<http://mailtoiftikhar.googlepages.com/moodvalidation.>)

Procedure

Every participant saw the movies in a computer generated random order. The participants were not aware of the nature of the movies or their groups. After watching each movie the participants were asked to assess their mood on the sheet provided. Then they continue to watch the next movie in random order.

RESULTS AND FUTURE RESEARCH

The averages of valence and arousal of each of the ten movie clips were calculated. The average scores for each movie are shown in Figure 1. The average rating of all movies was 4.4 for valence and 5.5 for the arousal dimension, therefore the movie 'clouds model', closer to these averages, was taken as a neutral reference in pair-sample t -tests to see which movies scored significantly higher or lower to this movie. As there are only two movies, 'scare' and 'horror' that deviate significantly from the reference movie on both dimensions, we still need to find two movies for the top left and right quadrant. After this, it will become possible to study the effect mood might have on programmers performance.

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