

PSYCHO PHYSIOLOGICAL EFFECT FROM RECOLLECTION AND TALKING ABOUT WHITEWATER RAFTING EXPERIENCES.

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Introduction

With the accelerating urbanization of the modern world “nature benefit assumption” (Ulrich, 1981) is gaining popularity, particularly with respect to relaxation and recreation. However, the majority of outdoor recreation benefit research has addressed on-site participation but not examined off-site recollection (exceptions Tarrant, Manfredo and Driver, 1994). Generally accepted by today’s professional is the concept that we need different methods, including physiological measures, to define and quantify the recreational benefits in the most valid and reliable ways we can (Roggenbuck and Driver, 2000). The purpose of this study was to demonstrate that the recollections of taking and talking about a day long white water rafting trip can produce physiological changes and those changes were different according to their emotional experiences.

Methods

A total of 111 right-handed persons were randomly selected from daily guests who participated in a white water rafting trip on the Chattooga River during July and August, 2002. Those involved in the study were given a monetary incentive for completing the study. The study was conducted in two stages. In part one; subjects completed a self-report questionnaire as a screening test to measure demographic information (e.g., gender, age), general physical condition (e.g., right-handed person, recent health problems) and past recreation experiences. Subjects who had health problems or were on medication were not included in the study. In the second stage, participants who completed their daily rafting trip were invited into an on-site laboratory to measure physiological responses in different conditions associated with the recollection of and talking about the most exciting and relaxing experiences from their raft trip. Four physical signals were measured during subject’s recollection and talking process: left and right-brainwave (EEG), forehead muscle tension (EMG) and heart activity (BVP). These signals were chosen because they are non-invasive and can provide a continuous record of the subject’s responses. The subjects’ imaginable abilities and involvement were measured during their recollection. A counterbalanced design was involved in the research for reducing treatment carrying-over effect. All physical data was collected through the medical device and computer software (Procomp+/Biograph V2.0 biofeedback System) and the physiological recording sensors were explained to subjects as they were being fitted.

Results

Testing mean absolute scores and mean change scores from baseline data has been applied in analysis of the physiological data. Four types of situations; including talking about exciting rafting experiences, talking about relaxing rafting experiences, recollecting exciting rafting experiences and recollecting relaxing rafting experiences consisted of the treatments for a repeated measures ANOVA analysis. All situations have

been controlled by age groups (≤ 30 years and > 30 years), gender (female and male) and water rapid class (section III or section IV). Three outcomes have been concluded.

Outcome 1: The recollection of exciting rafting experiences has more significant physiological arousal than the recollection of relaxing rafting experiences. Four types of physiological indices were measured during recollecting exciting and relaxing rafting experiences. The results indicated significant differences in the left-brain wave (EEG). Generally, recollecting exciting rafting experiences has higher alpha wave action in the left-brain. A significant 3-way interaction in EMG suggested that water rapid class and age group affected the treatment effect in forehead muscle tension ($F_{1,94}=7.714$, $P=0.007$). The results of correlation analyses indicated no significant relationship between either of the psychophysiological measures and the participants' ratings of vividness and involvement.

Outcome 2: Talking about exciting rafting experiences has more significant physiological arousal than talking about relaxing rafting experiences. Two significant 3-way interactions have suggested that the condition variables, water rapid class and age group in left brainwave ($F_{1,88}=5.792$, $P=0.018$) and in right brainwave ($F_{1,87}=9.044$, $P=0.003$) affected the treatment effect of alpha brainwave (EEG). Also, the significant difference was found in the EMG measures between talking about exciting and relaxing rafting experiences. Generally, talking about exciting rafting experiences resulted in higher left and right alpha brainwave and forehead muscle tension. Subject's skill level and previous rafting times did have a moderated effect toward the physiological arousal from talking about exciting and relaxing rafting experiences.

Outcome 3: The psychophysiological responses elicited from talking about rafting experiences were stronger than responses elicited from the recollections of rafting experiences. The results from a repeated measures ANOVA analysis for the four types physical parameters indicated significant differences for the effect in left and right brain wave (EEG) and forehead muscle tension (EMG) but not in the heart activity (BVP) from talking and recollecting rafting experiences. Generally, the psychophysiological response elicited from talking about rafting experiences has a stronger effect than from only the recollections of rafting experiences. A significant 3-way interaction has suggested that the condition variables, water rapid class and age group, affected the treatment effect.

Discussion

Results have implications for three applied areas of recreation research. Generally accepted by today's scientific and sporting circles is the concept that sports people performing at the very peak of their abilities can experience an increased level of alpha brainwave activity. Knowledge of the highest alpha brainwave levels can mean that managers have criteria to measure recreationists' optimal experiences and for structuring a more efficient approach to the allocation, delivery and management of recreation resources, which meet the implementation of a "Benefits-Based Approach (BBA)" to recreation management. For therapists and counselors, talking about and recollections of real-life recreation experiences can be used to strengthen the importance of leisure in physical and psychological therapy. Results of psychophysiological approaches to studying outdoor recreation can be used to validate existing social-psychological research findings.

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