

Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 191 (2015) 2699 – 2703

Procedia
Social and Behavioral Sciences

WCES 2014

Training Of Psychology Students In The Scientific Methods Of Research

Elena Vorobyeva^{a*}, Pavel Ermakov^a^a*Southern Federal University, Faculty of Psychology, Nagibina street, 13, Rostov-on-Don, 344038, Russia*

Abstract

In the training of psychology students in the Faculty of Psychology at the Southern Federal University (Russia, Rostov-on-Don) practice and exposure to the methods of scientific psychology are employed. Student conduct research in the motivation by using hardware that measures a variety of physiological responses. To assess motivation, students were trained to use the following measurements: assessment of social and psychological attitudes; need for affiliation; achievement motivation; cognitive orientation; need for approval and sensation seeking and risky behavior.

© 2015 Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Selection and peer-review under responsibility of the Organizing Committee of WCES 2014

Keywords: scientific methods of research; psychology students; motivation.

1. Introduction

The research carried out in the Faculty of Psychology of Southern Federal University can be categorized into four main areas: social-psychological, biological psychological, psychological-pedagogical diagnostics and correction and rehabilitation of individuals and groups. There are also four research centers in the Faculty of Psychology: Laboratory of Psychophysiology and Experimental Psychology (Professor, Doctor Vorobyeva Elena), Laboratory of Socio-Psychological Technology of Diagnostics and Training (Professor, Doctor Sidorenkov Andrey), Laboratory of Cognitive Psychology (Professor, Doctor Babenko Vitaly), Center for Tolerance, Southern Federal Region (Professor, Doctor Abakumova Irina). The Faculty trains psychology students according to the requirements for the bachelor degree program in Psychology and also prepares individuals for master degrees in Psychophysiology and

* Elena Vorobyeva. Tel.: +7-904-501-2036.
E-mail address: evorob@sfedu.ru

Clinical Psychology, Personality Psychology, Social Psychology, Developmental Psychology, General Psychology, Legal Psychology and Psychology in Cross-Disciplinary Studies. An important feature in the training of psychology is experience and mastery of scientific research methods, such as laboratory experiment and objective physiological measurement methods. In the Faculty of Psychology at Southern Federal University (Russia, Rostov-on-Don) training in the scientific methods in psychology have been created. In the laboratory of cognitive psychophysiology under the leadership of Professor Babenko psychology students investigate the spatial properties of visual mechanisms (Babenko, Ermakov & Bozhinskaia, 2010). Under the leadership of Professor Ermakov, psychology students take part in research investigating perception, attention and memory – for example, students study the relationship between attention and eye movements when scanning or analyzing images (Ermakov, Babenko, & Bozhinskaia, 2009). Experiments are conducted evaluating attention and the associated eye movements (Ermakov, & Dikaya, 2010). Using electroencephalography (EEG) to better understand creativity and complex problem solving students measure interhemispheric and intrahemispheric activities. Psychophysiological prerequisites for successful solution of convergent and divergent tasks by research participants of varying levels of giftedness are explored (Dikaya, Ermakov, & Dikiy, 2010). In the clinical program, students learn diagnostic syndrome analysis developed within Russian psychology (Zinchenko, & Pervichko, 2012). It is important to understand the cognition dimensions and development in chronically ill children (Aralova, Aslanyan, & Yershova, 2004). Under the leadership of Professor Ermakov students develop techniques to increase effectiveness in counteracting terrorism ideology. Projective techniques are used to determine individual proclivities and behaviors in a situation of a terrorist threat (Babiyants, 2012). Another area of research is studying the relationship between life goals and strategies during the educational process (Kruteleva, & Abakumova, 2013). At the Department of Psychophysiology and Clinical Psychology students take part in carrying out scientific research in psychophysiological mechanisms and lie detection. The method of evoked brain potentials is also used to study the association between lying and detectable physiological events. The polygraph is used to examine the relationship between psychophysiological variables and lying. Innovative technologies and methods are developed and used to detect lying via neurophysiological measurements in the various academic training programs (Dikiy, Dikaya, & Ermakov, 2012). Students take part in research in understanding the workings of the premotor cortex. In the research situation they investigate reaction time, motor performance of actions (maintenance of a vertical pose) and the perception of actions shown on a computer monitor (Kosonogov, 2011). In laboratory of psychophysiology and experimental psychology students take part in research of psychophysiological predictors of intelligence and achievement motivation in twins (Vorobyeva, & Druzhinin, 1997). Using twin method data on the spectral power of EEG to investigate individuals with different types of individual profile asymmetry (Vorobyeva, 2012), spatial synchronization of electric activity of the brain (Vorobyeva, & Ermakov, 2013) is used to assess individual aspiration for success or failure avoiding during various cognitive tasks (Vorobyeva, 2013). These features of brain electrical activity and event-related potentials in people with different level of intelligence and psychometric characteristics in achievement motivation can be used for diagnosis and prognosis of success in educational and professional activities (Vorobyeva, & Ermakov, 2012). At the Department of Psychology of Management and Akmeology under the leadership of professor Sidorenkov psychology students master new methods in social and psychological characteristics and efficiency of small groups in the organization. The computer technology «Group Potential» which consists of 15 techniques that integrate with formal procedures in determining how membership is assigned to individuals for informal subgroups (Sidorenkov, & Trishkina, 2010). At the Department of Social Psychology under the leadership of professor Labunskaya students take part in studying in the areas of friendship and adversaries contingent on the negativity or positivity of initial attitudes (Labunskaya, 2013), features Russian politicians (Ryumshina, 2013). At the Department of Psychology and Pedagogics of the Higher Education under the leadership of professor O. D. Fedotova students take part in determining features and use of social networks that can assist in the development of psychological and pedagogical prevention strategies to counteract youth extremism and terrorism (Fedotova, 2013). Research methods are used: focus group, case-study, supervisory methods, survey, projective techniques, statistical methods, a method of geographic selection (Fedotova, 2013).

2. Purpose of the article

In Russia much attention is given to the application of psychology in solving problems in Russian society (Zhuravlev, Ushakov, & Yurevich, 2013). The purpose of the article - to discuss the results of research in psychology student motivation and needs measured via psychophysiological indicators to career and life goals. Student enthusiasm for work, aspiration for success, prestigious achievement, interest in remuneration, call of duty, the obligation to help – existence of all these motives can result in interest in task performance and vice versa.

3. Methods

3.1. Participants

18 undergraduate psychology students from Southern Federal University (Rostov on Don, Russia) served as research participants in this study. Age ranges were from 20 to 30 years (17 women, 1 man). All research participants were of sound psychological and physical health. Verbal consent was given to take part in the study procedures.

3.2. Instruments

Physiological measurements were obtained for EEG and heart rate using electronic equipment (Medicom, Russia). EEG recordings for electrodes of Fz, Pz and the ear reviewer, were made in a soundproofed room with eyes open. The same equipment (Medicom) recorded heart rate simultaneously. After research participants were hooked up to measure EEG and heart rate, a series of questionnaires were administered via computer monitor whereby participants responded by selecting their answers on a large computer tablet. All participants were requested to complete the following set of questionnaires in the order given here: assessment of social and psychological attitudes (O.F. Potemkina); need for affiliation (A. Megrabyan), achievement motivation (A. Megrabyan); Rotter's Internal-External scale (J. Rotter); need for approval (The Marlowe–Crown social desirability (MCSD) scale); sensation seeking and risky behavior (M. Zuckerman).

4. Results

The mean wave lengths for EEG (ms) during administration of assessment of social and psychological attitudes was $24 \pm 4,7$; need for affiliation $35 \pm 9,2$; Rotter's Internal-External scale 29 ± 10 ; need for approval (The Marlowe–Crown social desirability (MCSD) scale) $25 \pm 5,2$; sensation seeking and risky behavior $30 \pm 6,7$. The social and psychological attitudes questionnaire measures participants on the following dichotomies: altruism – egoism, process – result, freedom – power, work – money. The social and psychological dimension of altruism is a characteristic that indicates willingness to set aside one's own self interests in favor of the interests of others and a focus on the overall general welfare of others. The dichotomy process-result assesses an individual's striving toward a goal despite hindrances and other failures. Affiliation motivation assesses two motivators: aspirations for acceptance and fear of rejection. Results obtained showed that research participants were equally divided among the two affiliation motivations; namely, half had aspirations for acceptance and the remaining half were motivation by fear of rejection. A motivation proclivity for acceptance by others is characterized by interpersonal relationships, sympathy, mutual understanding in communication. On the other hand, a motivation proclivity for fear of rejection is depicted by a fear of lack of communication, or that the communication will not be understood. Rotter's scale for Internal-External orientation measures the degree to which an individual attributes events that happen to them as primarily determined by internal or dispositional factors (some characteristic of the individual – such as resourcefulness or intelligence) or to external factors (such as bad luck or chance events). Results from the internal-external scale also reveal that half of the research participants were internals while the other half were externals. The measure of need for approval assesses the degree of dependence on others and the need for favorable approval from others, vulnerability and sensitivity to interpersonal influences and environment influences. The majority of

participants (75%) scored low on need for Approval indicating that they are comfortable with some level of interpersonal conflict, can defend their views even when confronted with contrary opinions and in general are not susceptible to social influence. On Zuckerman's scale of sensation seeking results indicated that nearly all participants scored in the middle or average level for risky behavior. Therefore, participants are moderate in their need to seek out new experiences. On the measure for achievement motivation, participants who scored high for achievement also had elevated heart rates (the heart rate = 84) than those scoring low in achievement motivation (heart rate = 75). Values on alpha-index EEG in highly achievement motivated participants was significantly lower (14,8, compared to participants with low achievement motivation 24,2) ($p < 0,01$). Probably low values of alpha-index were obtained on EEG (less than 30%) because participants' eyes were open during EEG measurement. In individuals with higher achievement motivation the alpha index was lower than for those who were more focused on avoiding failure. Thus, the results of the study showed that students with high achievement motivation and need to succeed had a cardiovascular system and brain waves that were more active than students with a lower need for achievement and oriented more toward avoiding failure.

5. Conclusions

An integral part of the educational training in psychology is a focus on and practice in the scientific methods of psychology. Research methods training should be included in both undergraduate and graduate programs since the purpose of research experience is to expose students to the scientific aspects of the discipline of psychology and the work in their future careers as psychologists. In the future, as part of the commitment and continuation of this research the authors plan to investigate larger samples and conduct comparisons for gender.

References

- Aralova, M.P., Aslanyan, K.S., & Yershova, M.P. (2004). Study of teenagers with oncopathology in remission and their reactions in frustrating situations, *Psycho-oncology*, 13, 8 Supplement: S, 10.
- Babenko, V.V., Ermakov, P.N., & Bozhinskaia, M.A. (2010). Relationship between the spatial-frequency tunings of the first- and the second-order visual filters, *Psikhologicheskii Zhurnal*, 31, 2, 48-57.
- Babiyants, K. (2012). Reflexive game as a means to prevent extremism among youth, *International Journal of Psychology*, 47, Supp.1. Special Issue, 402-403.
- Dikaya, L.A., Ermakov, P.N., & Dikiy I.S. (2010). EEG correlates of professional creative problem solving with insight, *International journal of psychophysiology*, 85, 3, 379.
- Dikiy, I.S., Dikaya, L.A., Ermakov, P.N. (2012). Amplitude and latency of components of event related potentials as indicators of false responses in participants with different modes of thinking, *International journal of psychophysiology*, 85, 3, 378.
- Ermakov, P.N., & Dikaya L.A. (2010). Peculiarities of frequency-spatial organization of brain cortical bio-potentials in creative individuals performing divergent and convergent tasks, *International journal of psychophysiology*, 77, 3, 316-317.
- Ermakov, P.N., Babenko, V.V., & Bozhinskaia, M.A. (2009). Dipole sources localization of late components of event-related potentials during effective and ineffective visual search, *Zhurnal vyssheĭ nervnoĭ deiatel'nosti imeni I P Pavlova*, 59, 4, 411-420.
- Fedotova, O. (2013). Radicalism and Terrorism Problems in a Scientific Discourse of Russian Social Sciences, *Procedia - Social and Behavioral Sciences*, 92, 334-343.
- Fedotova, O. (2013). The Content of a Site of the President of Russia as the Information Indicator of Realization of Counter-Terrorism Strategy in Russia. Terrorism Problems on a Site of the President of Russia, *Middle-East Journal of Scientific Research*, 16 (3), 392-396.
- Kosonogov V. (2011). Listening to Action-related Sentences Impairs Postural Control, *Journal of Electromyography and Kinesiology*, 21(5), 742-745.
- Kruteleva, L. Ju., & Abakumova, I.V. (2013). Life-sense Strategies as a Motivational-dynamic Characteristic of a Person, *Procedia-Social and Behavioral Sciences*, 86, 35-41.
- Labunskaya, V.A. (2013). Representations about Friend and Enemy at Different Life-span Stages, *Procedia-Social and Behavioral Sciences*, 86, 256-261.
- Ryumshina, L. I. (2013). Traits of the Self-actualized Personality in the Modern Russian Politicians, *Procedia-Social and Behavioral Sciences*, 86, 396-401.
- Sidorenkov, A.V., Trishkina, N.S. (2010). Empirical grounds for the model of individuals identity manifestation in small group, *Psikhologicheskii Zhurnal*, 31 (5), 17-29.
- Vorobyeva, E. (2012). EEG spectral power during the performance of mental tasks and individual profile asymmetry of twins, *International Journal of Psychophysiology*, 85, 3, 424.
- Vorobyeva, E. (2013). EEG Spatial Synchronization during Performance of Verbal Operations in Twins, *Procedia - Social and Behavioral Sciences*, 86, 205-210.

- Vorobyeva, E., & Ermakov, P. (2012). Event-related potentials and achievement motivation (research of twins), *International Journal of Psychophysiology*, 85, 3, 421.
- Vorobyeva, E., & Ermakov, P. (2013). EEG spatial synchronization in twins, *Behavior Genetics*, 43, 6, 547-548.
- Vorobyeva, E.V., & Druzhinin, V.N. (1997). Effects of the experimenter and subject communication on the manifestation of the psychometrical intellect in MZ twins teenagers, *Psikhologicheskii Zhurnal*, 18, 1, 70-80.
- Zhuravlev, A.L., Ushakov, D.V., & Yurevich, A.V. (2013). Prospects of psychology on Russian society problems' solving. Part I. Problem's statement and theoretical-and-methodological aims, *Psikhologicheskii Zhurnal*, 34, 1, 3-14.
- Zinchenko, Y.P., & Pervichko, E.I. (2012). The methodology of syndrome analysis within the paradigm of «qualitative research» in clinical psychology, *Psychology in Russia: State of the Art*, 157-184.