

Emotions Research of District Militias by Vibraimage Technology

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Abstract: Emotions consider as a subjective experience with physiological activation and external expression. While several emotions cannot be judged through visual observation or expression recognition system, which are called “potential emotions”. Analysis and judgment of potential emotions of militias through vibraimage technology will be helpful for improving management efficiency and promoting the accuracy of ideological and political work.

Keywords: emotions, vibraimage, militia, psychophysiological testing.

Introduction

Emotions (Fu Xiaolan et al., 2016) are the states accompanying people during the process of their work, life and study, etc., the expression of which can just present different personalities of people. For a team, a timely and objective evaluation of the emotional state of team members will be helpful for the implementation of work plans. The strengthening of team cohesion and the promotion of a sense of worth among members; meanwhile, emotional problems of members can also be timely found, thus concerns and adjustments can be given to ensure that the members gain enough attention and the sense of participation in their team, so as to improve the cooperative combat capacity of the team.

Emotions are the basic motivation of organic entities and a group of organized reactions, which can trigger corresponding reactive modes of a large numbers of body organs (e. g. face, heart and endocrine system etc.) at the same time (Tomkins, 1962). Emotions can be divided into subjective experience, external expression and physiological activation (Izard, 1991). The external expression of emotions is generally called facial expression, that is, the emotions are expressed through muscular movements at different parts. Physiological activation refers to the physiological reactions and changes generated by emotions, which is related to the comprehensive nervous system, e. g. the frontal lobe cortex, brainstem, central nervous system, autonomic nervous system, secretory system and somatic nervous system.

Emotions are measured by vibraimage technology (Minkin, 2017; 2020) using inter-frame difference accumulation in the video images. The vibrational frequency and amplitude of pixels are calculated through equations and depends on different emotional states of testee.

Materials and Methods

Vibrainage technology was adopted to test 61 soldiers and cadres at the armed forces department of a district, whose age was from 18 to 56, gender or position of them was not identified in this analysis, and statistical analysis of the data was done after the test through Excel2016 and Version 25 of SPSS. The psychophysiological testing by VibraMed program based on vibrainage technology (Minkin, 2020), was adopted for this test, and the test time was 30 seconds per person. The equipment used includes 2 Lenovo laptop computers (one has i5-8250U/4GDDR processor, the other i7-8550U/8GDDR, 1 desktop PC (i5-6500/4GDDR), and 3 Microsoft 1080 cameras. Data analysis includes emotional and psychophysiological parameters: Aggression, Stress, Tension, Balance, Charm, Energy, Self-Regulation, Inhibition, Neuroticism, Depression and Happiness (Minkin&Myasnikova, 2018; Minkin, 2020).

Distribution of Emotional Parameters

Distribution of Average Number of Mean and Extreme Value of Each Parameter given in Table 1.

Table 1

Distribution of Mean and Extreme Values of Emotional Parameters

Name of parameter	Minimum norm value	Maximum norm value	Average mean value	Average minimum value	Average maximum value
Aggression	20	50	40.99	19.71	51.65
Stress	20	40	31.70	26.58	37.63
Tension	15	40	30.19	14.45	47.80
Balance	50	100	64.38	48.64	78.32
Charm	40	100	72.49	60.73	79.16
Energy	10	50	23.04	12.74	28.78
Self-Regulation	50	100	67.77	58.42	77.22
Inhibition	10	25	16.74	11.99	25.14
Neuroticism	0	50	28.99	2.09	35.42
Depression	20	50	26.24	17.32	29.80
Happiness	20	100	38.46	25.80	46.86

It can be known from Table 1 that the average number of mean value of parameters is within the normal scope. Both the minimum and maximum value of the Aggression parameter (referring to the mean value of corresponding parameters in the 61 copies of data) are beyond the normal scope, indicating that the testees are of their professionalism and a straightforward character. Stress parameters are within the normal scope, indicating that the average Stress of testees is within a normal scope. Both minimum and maximum values of Tension are beyond the normal scope, indicating that anxiety or tension generally exists among the testees. The minimum value of Balance is beyond the normal scope, indicating that the physical health condition of some testees is not that good, whose main reasons are dizziness and headache, etc., caused by various diseases. The levels of Charm, Energy and Self-Regulation are within the normal scope. The maximum value of Inhibition is beyond the normal scope, indicating the existence of conditions in which parts of testees inhibit their own thinking and behavior. The minimum value of Depression is lower than the normal scope, indicating that the depression level of testees is low, that is, most of them are optimistic without any depressive emotion. The Happiness level is within the normal scope, indicating that the testees are generally satisfied with their own environment and state.

Figs 1-1; 1-2 and 1-3 shows data from Table 1 in graph form.

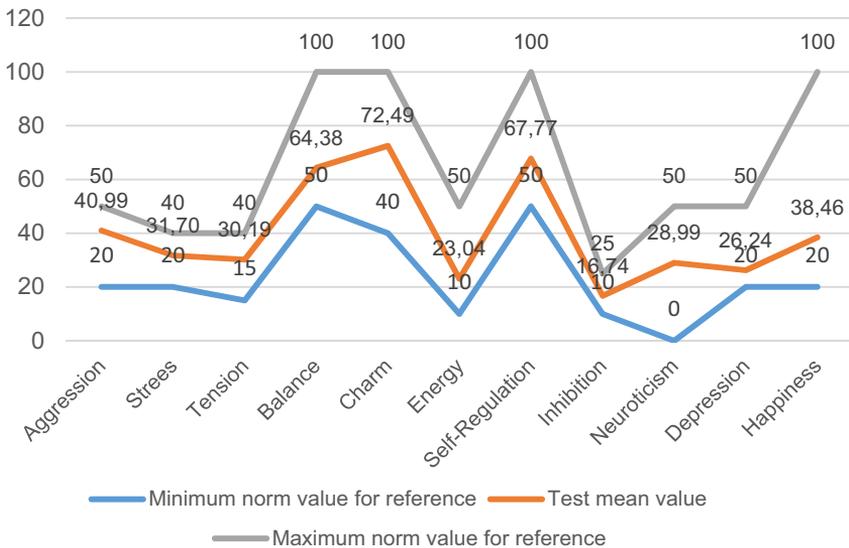


Fig. 1-1. Comparison between the mean and extreme value of the test mean value

It can be seen from Figure 1-1 that the average number of all test mean values is within the normal scope.

Under normal conditions, the minimum test value (mean value) should be larger than the norm value. From the above figure, it can be seen that the minimum test value of Aggression, Tension, Balance and Depression parameter is lower than the norm value while at a critical state, thus there is no abnormality.

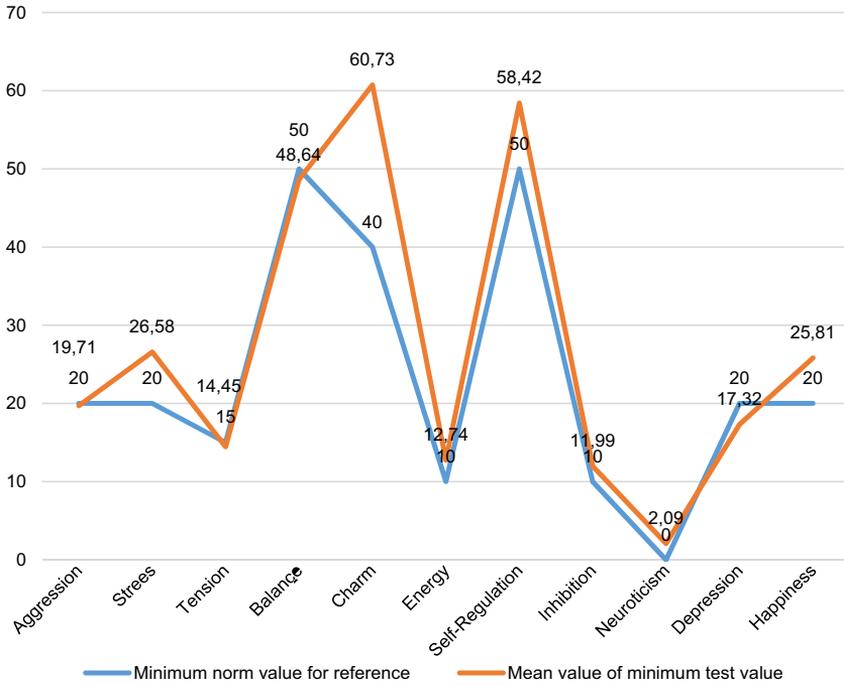


Fig. 1-2. Comparison between the test minimum value and the minimum norm value

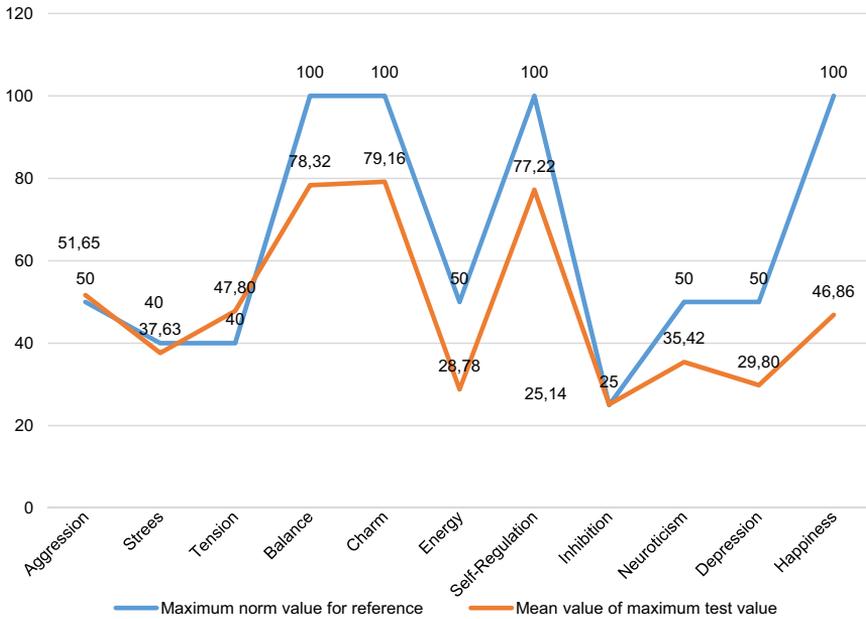


Fig. 1-3. Comparison between the mean value of maximum test value and the maximum norm value

Under normal conditions, the maximum test value (mean value) should be lower than the norm value. It can be known from Figure 1–3 that the level of Tension and Aggression is higher than the norm value, of which Aggression indicates the professionalism of testees, and that of Tension indicates that parts of the testees have anxiety or tension emotions.

Distribution of the Mean Value of Emotional Parameters in pie chart form shown on Figure 2-1.

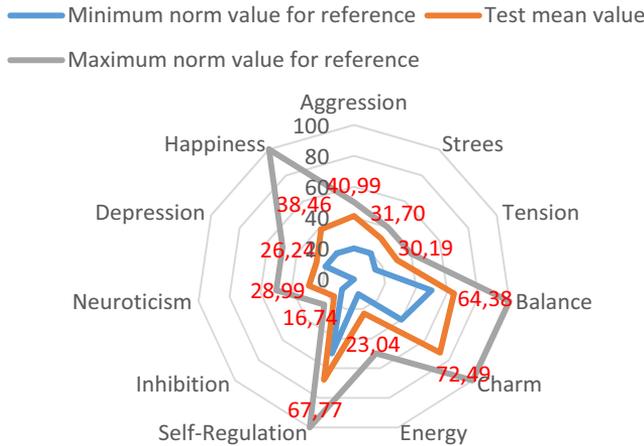


Fig. 2-1. Pie chart of emotional parameters

It can be known from Figure 2-1 that the parameters of testees basically evenly distribute between the maximum and minimum norm value, indicating that there is no difference with normal people on the aspect of emotional state.

The Number of People Whose Extreme Value is Beyond the Normal Scope for Reference shown on Figure 3-1.

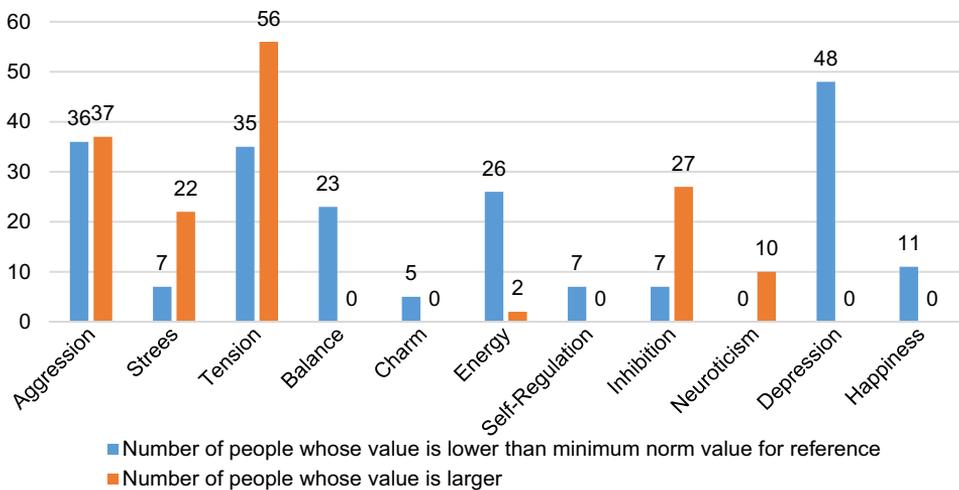


Fig. 3-1. Number of people whose extreme value is beyond the normal scope for reference

It can be known from the above figure that the number of people whose Aggression level is lower (36 people) and higher (37 people) than the normal reference scope is basically the same, which takes about 59% of the total number. Parts of the testees have a straightforward character; seen from the aspect of professionalism, most testees can rapidly engage in their work based on the deployment of superiors.

The maximum Tension level of 91.8% of testees (56 people) is higher than the maximum value of normal reference scope, indicating that most of them are anxious on some perspective, which may be a certain aspect of work, life or emotion, although no anxiety disorder is formed, they still need to pay attention to having relaxing trainings or appropriate relief.

The minimum value of Depression parameter of 78.69% of testees (48 people) is lower than that of the normal reference scope, indicating that most testees are optimistic and open without any depressive state.

The proportion of extreme value of other emotional parameters that are beyond the normal reference scope is lower than 50%, so that no detailed analysis or explanation will be made.

Comparison of Measurement Scope and Reference Norm of Each Parameter shown on Figs 4-1 to 4-9.

It can be seen from the above figure that except Aggression and Tension level, all other parameters are within the normal reference scope for parameters. While the distribution scope of Aggression and Tension level is larger than the norm scope, indicating that those 2 emotional parameters are abnormal from the norm, which, from the perspective of professionalism, also represent that the testees have a swift response and the professionalism of “always be prepared”.

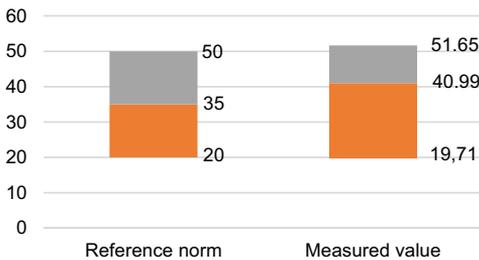


Fig. 4-1. Aggression

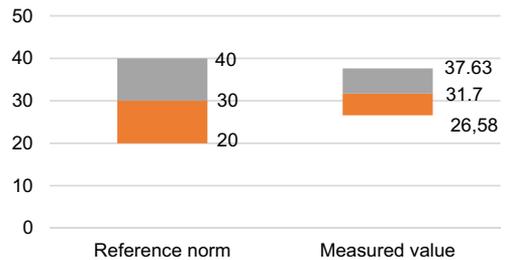


Fig. 4-2. Stress

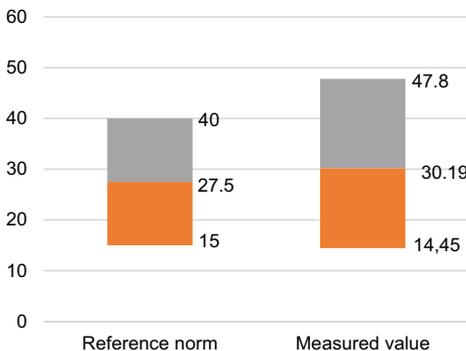


Fig. 4-3. Tension

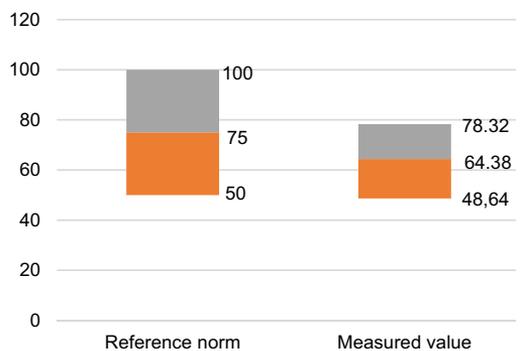


Fig. 4-4. Balance

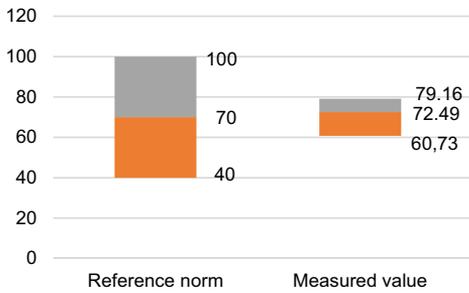


Fig. 4-5. Charm

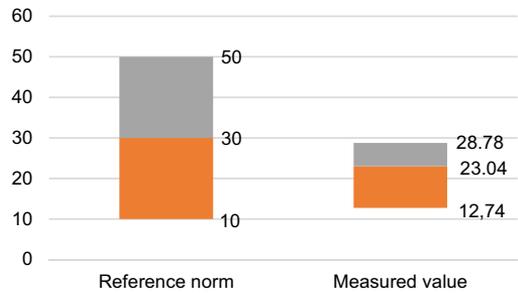


Fig. 4-6. Energy

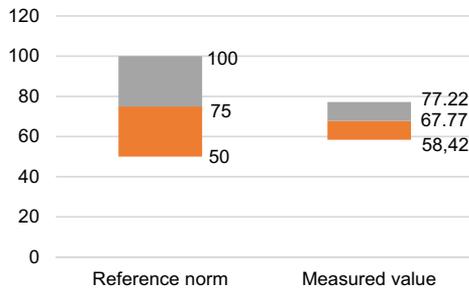


Fig. 4-7. Self-Regulation

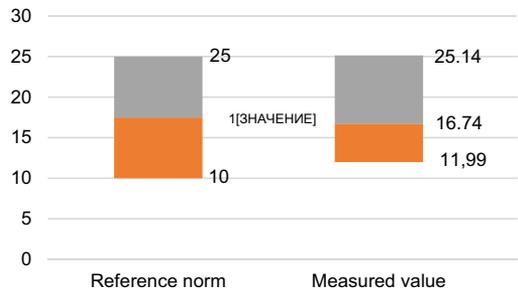


Fig. 4-8. Inhibition

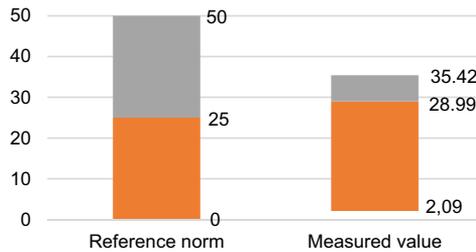


Fig. 4-9. Neuroticism

Frequency and Normal Distribution of Measured Value of Each emotional Parameter shown on Figs. 5.

Explanation: there is a slight skewness to the left in the above figure, that is, the score of more people is within a high-value region, indicating that their aggressivity level is generally high, such a distribution indicates the professionalism of the testees.

Explanation: there is a slight skewness to the left in the above figure, that is, the score of more people is within a high-value region, while there are a few people whose value is beyond the norm scope, indicating that parts of testees are in a high pressure-bearing state, while it has not exceeded their bearing scope.

Explanation: the Tension level basically presents a normal distribution, while a small peak appears at the segment of 20. Reasons for the appearance of such a condition may be the difference in age, gender or post, that is, parts of the testees have a lower anxiety level.

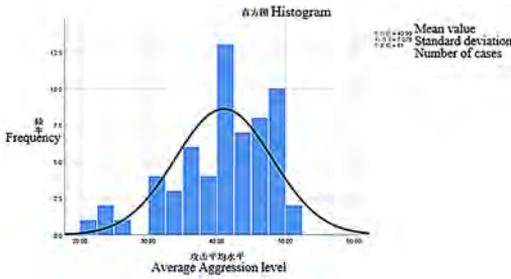


Fig. 5-1. Aggression

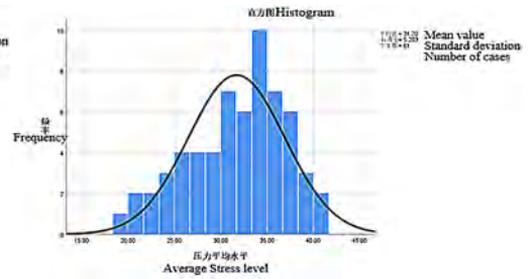


Fig. 5-2. Stress

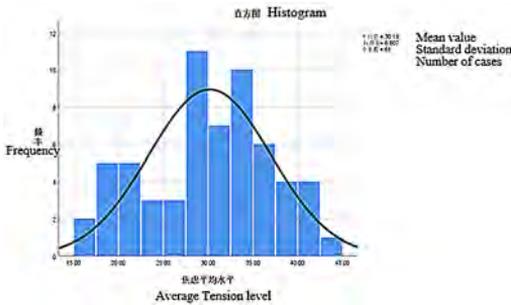


Fig. 5-3. Tension

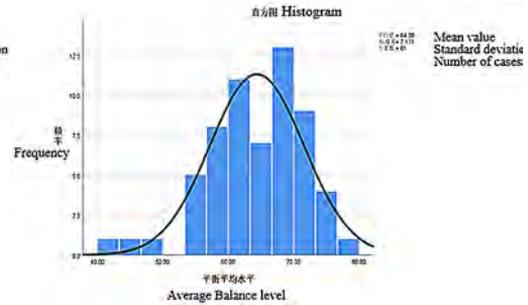


Fig. 5-4. Balance

Explanation: there is a skewness to the left in the distribution of Balance parameter, indicating that parts of the testees have a lower sense of balance, which are mainly headache, dizziness or problems in vestibule caused by blood pressure and cervical vertebra, etc.

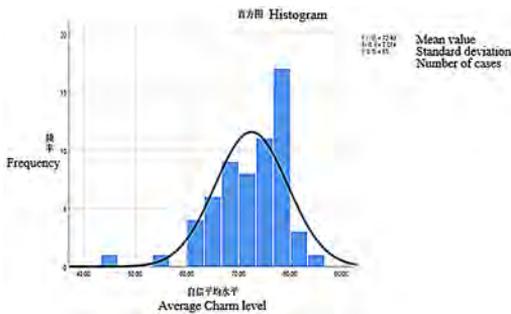


Fig. 5-5. Charm

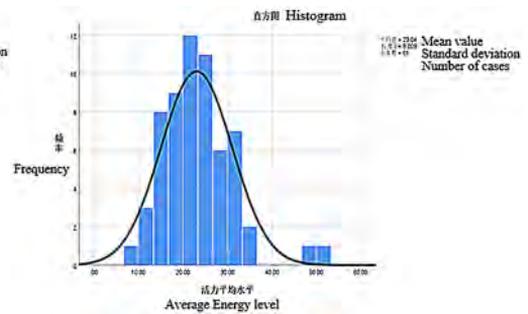


Fig. 5-6. Energy

Explanation: there is a skewness to the left in the distribution of Charm, indicating that Charm level of some individuals is low.

Explanation: there is a skewness to the right for Energy, that is, the vitality of most people is in a normal state, while the score of some individuals is higher, indicating that they are in an active or excitatory state.

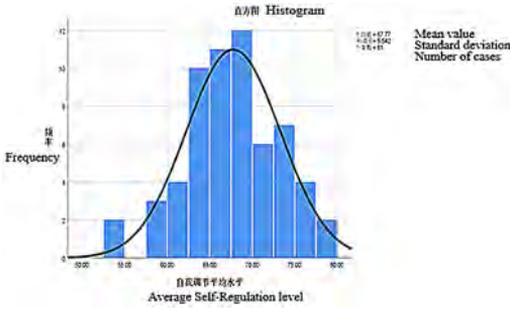


Fig. 5-7. Self-Regulation

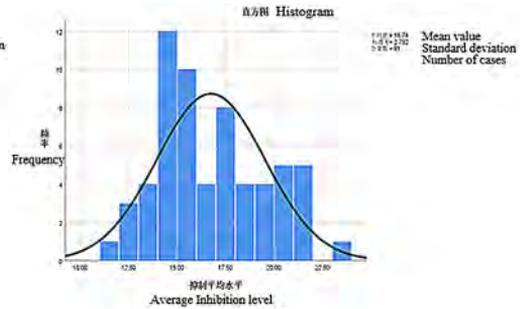


Fig. 5-8. Inhibition

Explanation: there is a skewness to the left in the distribution of Self-Regulation, indicating that the self-regulation level of some individuals is low, who are in a certain emotional state for a long time without being effectively adjusted.

Explanation: there is a skewness to the right in this parameter, indicating that the inhibition level of some individuals is high, that is, their thinking and behavior are inhibited.

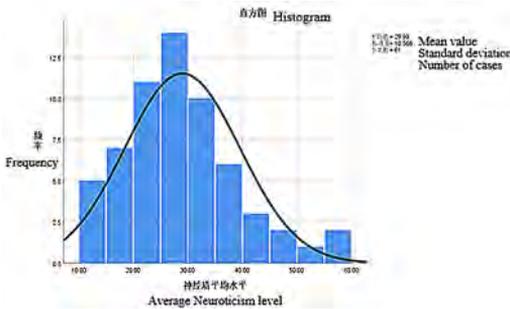


Fig. 5-9. Neuroticism

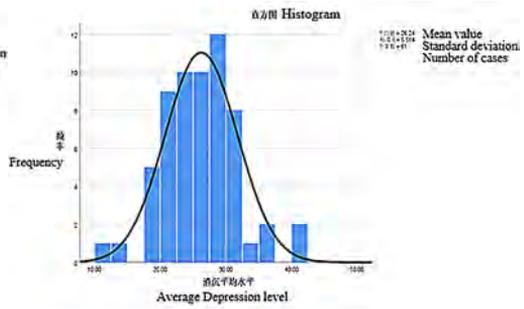


Fig. 5-10. Depression

Explanation: there is a skewness to the right of Neuroticism, indicating that parts of them are sensitive to the external and their own state.

Explanation: Depression parameter is in a normal distribution, indicating that the testees have a normal emotion on the whole, few of whom have negative emotions like discouragement or pessimism, etc.

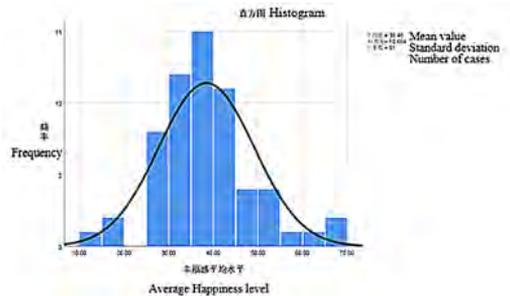


Fig. 5-11. Happiness

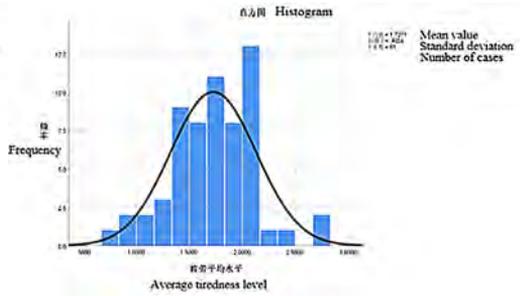


Fig. 5-12. Depression

Explanation: there is a skewness to the right for Happiness, indicating that the Happiness level of most testees is within an average scope, some hope to be better while others are satisfied with their current state, who have a high happiness level.

Explanation: Depression is basically in a normal distribution, indicating that the sleep quality of most testees can be guaranteed, parts of them cannot have enough sleep time or have a low sleep quality, while others have a high score, indicating that they were nervous or excited when testing.

Distribution of Emotional State Pie Diagram

Emotional state contains data of 3 aspects, namely negativity, positivity and physiology, of which negativity is the mean value of Aggression, Stress and Tension; positivity is that of Balance, Charm, Energy and Self-Regulation; and physiology is the mean value of Inhibition and Neuroticism.

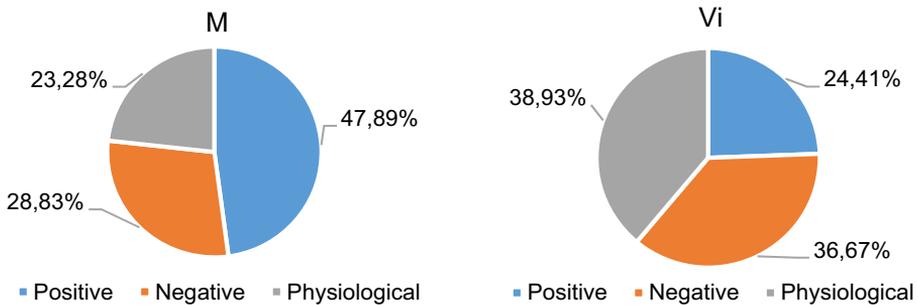


Fig. 6. Distribution of emotional states

It can be seen from the comparison of the pie chart of measured value of M and that of the Vi variability that negative emotions will increase in the later period, which is from 28.83% to 36.67%. The increase of negative emotions mainly comes from that of the level of Aggression, Stress or Tension, which is rooted in professionalism on the one hand, and may also be caused by reasons like work or life.

Comparison of Differences among Parameters, Emotional Indexes and Different Groups

It can be known from Table 2 that there is a great difference in Aggression level with normal groups, which is caused by professionalism according to analysis. There is difference in Charm level with normal groups, which is caused by a higher self-confidence than ordinary people that is brought by the work and life in armed forces as well as their identity. The difference in Self-Regulation level is caused by the

strict management in group living and work, leading to a limited self-control scope. The difference in Depression level indicates that they are in an optimistic state living together, which is higher than the normal scope; and their happiness level is also higher than the normal level.

Table 2

Inspection of differences in different emotional indexes and parameters n = 61

Name of parameter	Mean value	Standard deviation	Mean value of norm	t	P
Aggression	40.99	7.08	35.00	6.614	0.000*
Stress	31.70	5.20	32.00	-0.447	0.656
Tension	30.19	6.81	30.00	0.222	0.825
Balance	64.38	7.17	65.00	-0.675	0.502
Charm	72.49	7.01	70.00	2.774	0.007*
Energy	23.04	8.01	25.00	-1.91	0.061
Self-Regulation	67.77	5.54	70.00	-3.145	0.003*
Inhibition	16.74	2.79	17.00	-0.723	0.472
Neuroticism	28.99	10.57	30.00	-0.749	0.457
Depression	26.24	5.51	30.00	-5.32	0.000*
Happiness	38.46	10.68	35.00	2.531	0.014*

* represents that $p < 0.05$

Those whose t value is negative represent that they are lower than the norm, and those whose t value is positive means that they are higher than the norm.

Conclusion

To sum up, due to a more obvious professionalism and a better life experience brought by their profession and identity, there is a higher value of Aggression, Charm, Happiness and a lower level of Depression and Self-Regulation compared to the norm. These results indicate that there is an excellent ideological and political work as well as management level in this team, which is of a high team cohesion.

Suggestion: parts of the members have a high Value of Tension, Stress and Energy, who should have regular or irregular psychological counseling or team tutorship, or have activities like relaxation training, etc. Regular emotion monitoring by vibraimage technology could be used for support of psychological consulting of district militias.

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